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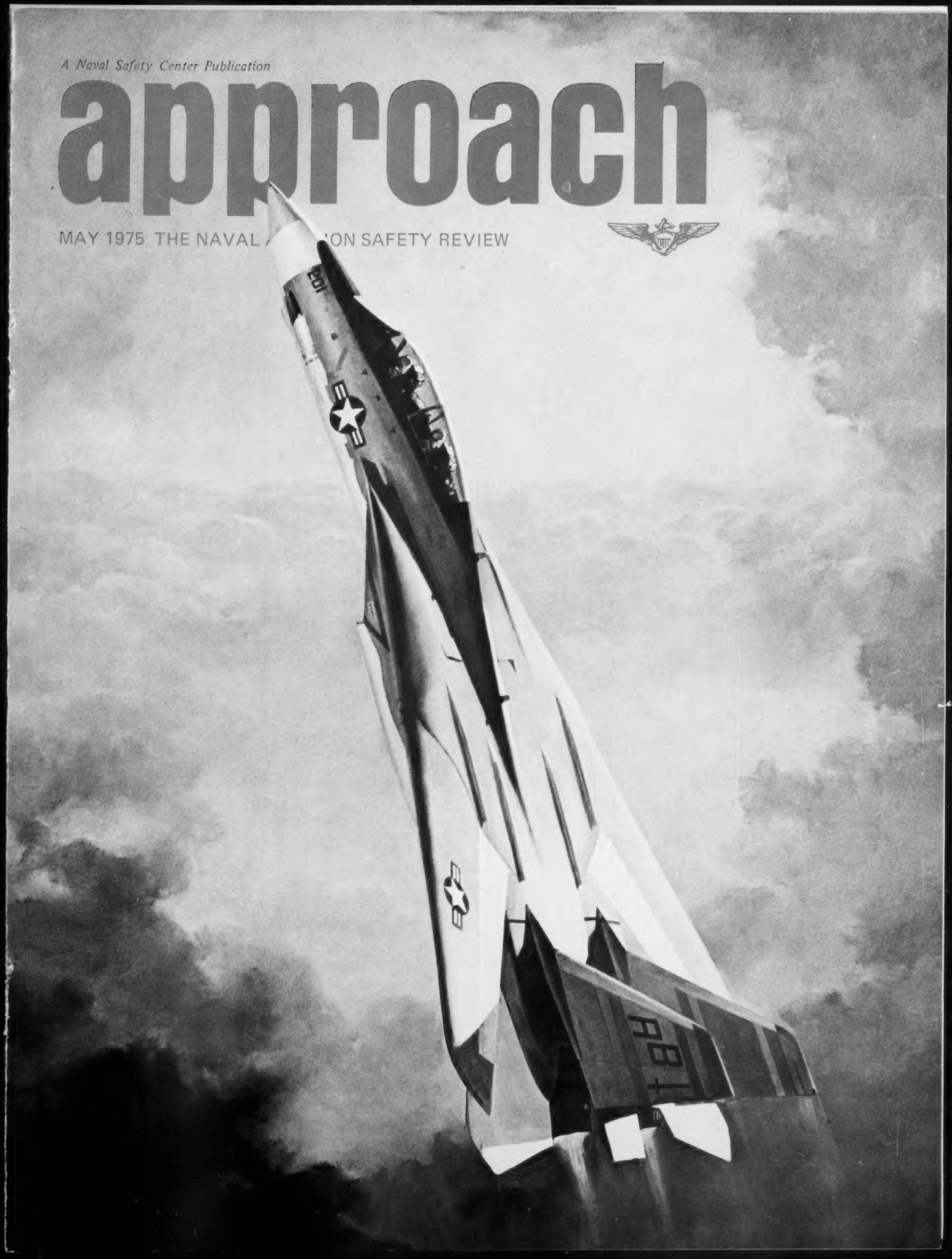
approach

MAY 1975 THE NAVAL A[illegible]ION SAFETY REVIEW



By LCDR Arthur D. Schatz
HSL-32

The Flight of

The Development of the LAMPS Program

LIKE the legendary Phoenix bird, consumed in fire and rising in youthful fashion from its own ashes, the LAMPS program has emerged from a disastrous beginning into an organized, efficient program, well aware of its safety responsibilities.

How did this happen? Why is LAMPS unique in aviation safety? I shudder to use the word "unique" but we in LAMPS know of nothing to compare with the small deck, small detachment, total ship/helicopter interface which is our daily way of life.

In our first year as a functional LAMPS squadron, we found to some extent the greatest commonality of safety problems relative to all helo operators. The AIRLANT LAMPS squadrons had five major accidents in FY-72/73. The accidents spoiled a perfect safety record for the parent command, formerly HC-4, which had spanned a period of 5 years. An almost identical situation existed on the West Coast.

Accident cause factors involved material failure, maintenance error, and pilot error – not exactly your

the Phoenix

trend analyst's utopia. One strong indicator did emerge – the concept; a one-bird detachment, deploying on a nonaviation ship (now designated an aviation facility ship).

We were being forced through an ever-expanding, high-priority program to man more and more ships, with personnel having little aviation experience, in detachments which were miniature squadrons. Manning levels were bareboned, and in fact, each man in the det was *the* resident expert. He and his publications were the final word.

Early dets understandably got the top people, leaving the home guard thin but capable. Then the two dets became three, then five, etc. Just try to imagine 10 minisquadrons full of resident experts. Our "chiefs" were third class, our "QA reps" were airmen. As the program received more attention, new blood was pumped in – rated men *with experience in F-4s and S-2s*, but no helicopter background.

The interface problem of ship/helicopter was a repetitious learning process. Faced with publications which varied from subtleties to contradictions in their operating procedures, pilots and ship's personnel were frantically cross-checking the aircraft NATOPS with the CVA/CVS NATOPS and NWP-42. None was complete enough to be accepted as *the bible*.

Additionally, with the formation of new LAMPS squadrons, SOP varied. As a result, when decks were used for cross-training, procedures were new and unfamiliar. For example, one unit would fly out of the chocks while another demanded chock removal prior to launch.

Old sacred cows refused to be eliminated, such as pilots insisting they needed a crewman in a gunner's belt to call tailwheel clear for shipboard landings. They simply didn't trust the ship's LSE to make an accurate call.

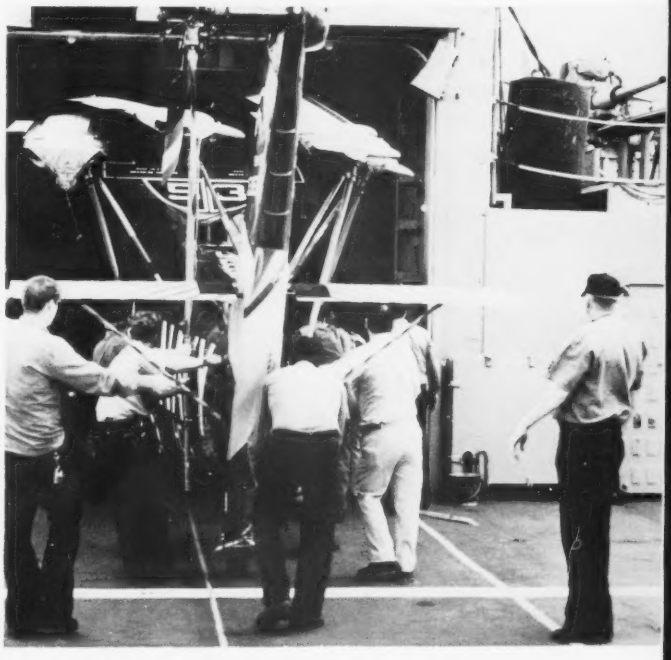
The dets were called upon to deploy on a short notice, urgent priority basis, and the number of crunches, incidents, and accidents bore out the necessity of a strong safety action plan.

Thus LAMPS was faced with a monumental task. A blend of standardization, additional training, mutual cooperation, and indoctrination was sorely needed in a hurry! A letter to COMNAVAIRLANT predicted a major accident rate of 2.86 for LAMPS. The predicted rate was a conscientious effort to consider the prevailing and anticipated shortages, tempo of operations, and the state of manning and training.

To counter the predictions and reverse the inevitable, certain basics were applied to educate and prepare dets and ships for the task. Publications which were contradictory or which didn't go far enough to illustrate the total evolution were consolidated into a CINCLANT LAMPS SOP. The result was a document, complete in detail to cover OOD responsibilities, crash/rescue stations, launch/recovery procedures, wind envelopes, and airborne emergency procedures applicable to the ship/det interface. Other procedures were developed to allow the ship to operate within the confines of the helo NATOPS program. It's been gratifying to observe the positive response of the DESRON commanders to this document. In fact, they decided to chair the update of the new SOP.

Another area, so often overlooked and yet such a sore point with det OinCs, is called can-do-itis. It's the overzealous reaction of OinCs to please their superiors and prove the det capable of any task. This misguided spirit has led to problems and abuses of the LAMPS concept. Reports continue of helo use as a private utility vehicle for embarked staffs and ship's senior officers. Are the flights through the shipyards in marginal weather, trying to avoid cranes and towers, justified just to save a 20-minute car ride? The fault is twofold: the initial request for unnecessary helo flights and the OinC acceptance of the request.

Education was the next step in improving LAMPS



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safety. Education of all hands was necessary regarding the expected performance of duty and limitations of mission, weather, and aircraft. To this end, all dets, prior to deployment, are briefed about what can and can't be accomplished. The Naval Destroyer School is staffed with an aviation LAMPS expert, and through liaison with him, the flow of information is constantly updated.

Education continues as the squadron seeks safety school billets at Monterey for all prospective OinCs. Once the det forms, it is the reporting custodian for its own aircraft. All incident/UR and accident reports are the det's responsibility. Having a qualified ASO in the det is an asset that cannot be underestimated for accident prevention and mishap reporting.

The OinCs possess the squadron's locally prepared safety program instruction. This complete document was prepared especially to cover all aspects and contingencies of a new unit from shipboard organization of safety councils to a ship CO's briefing of mishap reporting should the helo be lost at sea with its entire officer complement aboard. Heavy-weather tiedown procedures and passenger briefings are included, along with instructions to the ship OOD of launch/recovery procedures and helpful hints for shipboard maintenance safety. This document has become a must for deployed dets and has proven to be an excellent educational tool.

The squadrons, in conjunction with Helicopter Sea Control Wing ONE, have actively participated in achieving expanded wind envelopes to provide greater flexibility for launch and recovery. The same type of checklist is being studied for other aircraft operating in the LAMPS environment. New procedures are being investigated to achieve maximum performance and utilization from our dets in a safe, efficient manner. In fact, the Wing has shown interest in the progress of the

hauldown, securing, and transversing system which has been proposed, and should allow a much expanded operational envelope with greater safety.

The Wing's insistence of a predetermined deployment schedule has allowed us to lighten somewhat the burden of inexperience of new personnel. A det forms 6 weeks prior to deployment to identify any personnel or material shortages or shortcomings. A 2-week, Wing-supervised workup allows ships and dets to operate with each other to illuminate problem areas and correct them. During the ship's 30-day POM (preparation for overseas movement) period, the det stays together performing major checks and maintenance on the helo while squadron and contractor help is still available. In all, the det is a team for 12 full weeks prior to their first operational mission.

Locally, the squadrons and Wing have been participating actively in preparing audio scan programs as a training aid. Also, locally prepared TV programs for training and education have been developed to provide relief from other methods of getting the word out. Believing that one picture is worth 1000 words, COMNAVAIRLANT's 5700.14C, General Maintenance Safety Instruction, was reproduced into a slide presentation. We didn't eliminate all 1000 words, but now when we say "don't," a vivid picture of an unsafe practice is in the mind of viewers. Other programs we have found useful and effective are the squadron OHRs (operational hazard reports). I'm sure every squadron has something similar, but our tack is getting results. We let all hands know that safety is for everyone. Line personnel run the line. If anyone violates standard practices, it's the line PO who gets chewed out. A rash of OHRs have poured in putting on report the CO/XO/ASO, or anyone not using sound attenuators or goggles during preflight while adjacent to other helos turning up. It started as a get-even-with-the-officers program, but has progressed into an active, hazard-reporting system encompassing all aspects of industrial safety.

A safety cop was instituted. He's a roving watchdog with a handful of UNSATs (unnecessary negligence safety action ticket). The safety cop spots violations and issues UNSATs. The form includes the offense, offender's name, and time. On the back of the form, a space is available for the division CPO or officer to sign within 4 hours and make an appropriate remark of corrective action. The UNSAT is matched with the ASO's copy and is used by the ASO to spot any unsafe trends by individuals from a particular shop. For us it was a huge success.

A pilot's NATOPS review program was instituted which calls for weekly exams. Each week a number of pages were selected to cover the material for the following week's exam. Additionally, safety messages, displayed in the wardroom, were quiz add-ons – ensuring that such messages are read. Is this positive or negative? Who knows, but it works!

A weekly spot check by three pilots (covering flight safety, maintenance, GSE, line ops) has helped to keep squadron personnel alert to potential hazards. There's no doubt about it; safety may be an attitude, but it's not born within us.

To keep current on the pulse of the hangar deck, we distribute pertinent safety questionnaires to evaluate the effectiveness of the many programs. These have proven

enlightening and have uncovered several potential brush fires which can be put out quickly. This program is only as effective as its feedback.

We've tried 'em all – poster contests, safety slogan contests, all-hands gimmicks, Polaroid pictures, quizzes, etc. You have to keep plugging away, stay fresh, improvise – the whole 9 yards. We have a safety-man-of-the-month to recognize specific deeds and a Keep-on-Truckin' award to recognize attitudes. Yet, one "gotcha" can have more effect than six safety-man-of-the-month awards. For example, the time to get the rail and install it for the checkstand isn't taken because the man is afraid for his safety, but because he's afraid of the ASO, the CO, or the supervisor. When you get down to the nitty-gritty, it's fear that prompts safety – not true concern for safety, per se. When I say fear I'm thinking of reprisals for getting caught doing something unsafe – not the fear of getting hurt.

Enforcement is the key to an effective safety program. Laws are made to protect us. Just look at the speeding laws. Policemen are needed to help us protect ourselves. They provide the fear stimulus to keep us out of trouble. We cannot trust ourselves, and our human foibles don't permit us to wheel free rein. Safety instructions, SOP, correct procedures, etc., are law, and I think you have to ask what kind of enforcement you have to be effective.

LAMPS has come a long way in safely adapting to an inherently dangerous environment. The battle for safety is never won, however, and future LAMPS detachments must continue experimenting and innovating as we have done to keep the accident rate down and prove LAMPS a viable concept. ◄

An airplane is like an egg. There is no such thing as a fairly good one.

Ace L.

AIR BREAKS

Skyhawk **Skid.** A student TA-4J pilot was returning from a syllabus hop. Breakup and landing approach to Runway 13 were normal. Wind direction/velocity: 170 at 12 knots – an 8-knot crosswind component. Wind condition: variable and gusty.

The RDO observed that the *Skyhawk* touched down nose high and left wing down on runway centerline. Almost immediately, it commenced a left skid. The student stopped throttle reduction as he became concerned with the skid and applied what he considered full forward stick and full right aileron.

When it became apparent he could not stay on the runway, the distraught aviator immediately applied full military power, aft stick, and full right aileron. Touchdown had been at the 7300-foot remaining mark and the aircraft left the runway with 5800 feet remaining at military power. The runaway *Skyhawk* rolled about 800 feet through the grass, crossed Runway 17, and became airborne just prior to 5000-foot remaining.

After an airborne visual check, an uneventful arrested landing was made on Runway 17.

Since the aircraft entered a left skid almost immediately upon touchdown, it is probable that the pilot was slow to apply appropriate crosswind inputs. Then, when the pilot failed to retard the throttle enough to activate the spoilers, his crosswind rollout corrections were virtually nonexistent. And finally, flaps were left full down. Realizing that he did not have spoilers and that he was probably not going to stay on the runway, the student correctly elected to initiate a waveoff. The application of full military power lightened the aircraft load on the struts and undoubtedly was a major factor in preventing the landing gear from collapsing.

Failure to fully retard the throttle upon landing was the major factor in this incident. Such failure is not a new phenomenon. A recent training wing study pinpointed it as a continuing and real problem that was a factor in six of seven landing accidents studied.

This incident fortunately resulted in only minor damage. The situation, however, was such that results could well have been catastrophic.

Unintentional Gear-up Landing. The crew of an H-2 was engaged in personnel transfers from USS BOAT to the beach. Winds were strong and gusting. Adding to the pilots' problems were intermittent communications with the tower and unfamiliarity with the field.

On the first trip to the beach, with the copilot at the controls, the helo was flown on a modified right base to a hover over the duty runway. The copilot then air taxied to a landing spot on an off-duty taxiway and *landed gear up!*

After touching down and incurring limited damage, the copilot lifted back into a hover, lowered the gear, and landed again. The reporting custodian listed the cause as failure to use the landing checklist.

Let's see what else was reported.

- External demands upon the pilot's attention set the stage to forget something. *The landing checklist?*
- Poor communications existed with the civilian airport and the

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tower didn't ask for a gear check. *Knowing this, the pilots should have been extra careful to complete the checklist.*

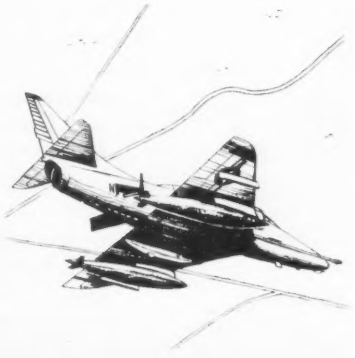
- The peculiar design feature of the H-2 that precludes transferring fuel from the aux tanks with gear down has bred a tendency to hold the gear until close to a landing. *In the name of all that's right, fittin', and proper, what pilot needs to transfer fuel once he starts an approach to land?*
- The crewman, who can see the gear when it's down, didn't report. *Why?*

Reveille in the Cockpit. It was a nice night to fly—a routine surveillance mission with a full moon and few clouds. But after 3 hours, S-2 cockpits get awfully cramped and uncomfortable. I was in the right seat, and the other pilot had control. So, in an attempt to achieve a more relaxing position, I slid my seat back, put in full seat tilt, and disconnected the copilot's yoke. I put my left foot on the yoke and then lifted my right foot up to cross over my left. As I did this, my right foot got high enough to punch the starboard feather button (and they said it couldn't be done). Recovery, needless to say, was rapid. The result was a 900 rpm drop and a somewhat startled crew, but the biggest realization was that even with 1900 hours in type, catastrophe can befall the careless, and keeping a bird in the air is still a full-time job for everyone. I can be thankful that the lesson learned was not at any greater cost than a max panic drill.

Skyhawk **Yaw.** An A-4L *Skyhawk* was in level flight, 15,000 feet, 300 KIAS, when the pilot noticed the turn-and-slip indicator deflected one-half ball-width to the right. Attempting to return to balanced flight using rudder trim caused mild yaw oscillations to begin. The AFCS was in STANDBY with the stab aug not engaged. AFCS was turned off with no effect. The pilot then tried to counteract the yaw oscillations with rudder, but they increased in amplitude and after about 20 seconds, the ball was randomly deflecting full right to full left.

The pilot was unable to center the ball with either rudder or trim and was having extreme difficulty in controlling the aircraft. An emergency was declared and an F-14 joined on the A-4. The emergency generator was deployed in an attempt to correct possible rudder trim or AFCS malfunction. The yaw oscillations continued and rudder pedal application was ineffective.

A visual inspection by the F-14 did not reveal a droptank malfunction or any other airframe abnormality. The aircraft was slowed to 200 KIAS but continued to yaw. *The pilot elected to attempt a hydraulic flight control disconnect.* Prior to disconnecting, he was unable to locate the generator NORMAL-BYPASS switch to restore normal trim. In an A-4L aircraft the switch is almost inaccessible due to the map case location.

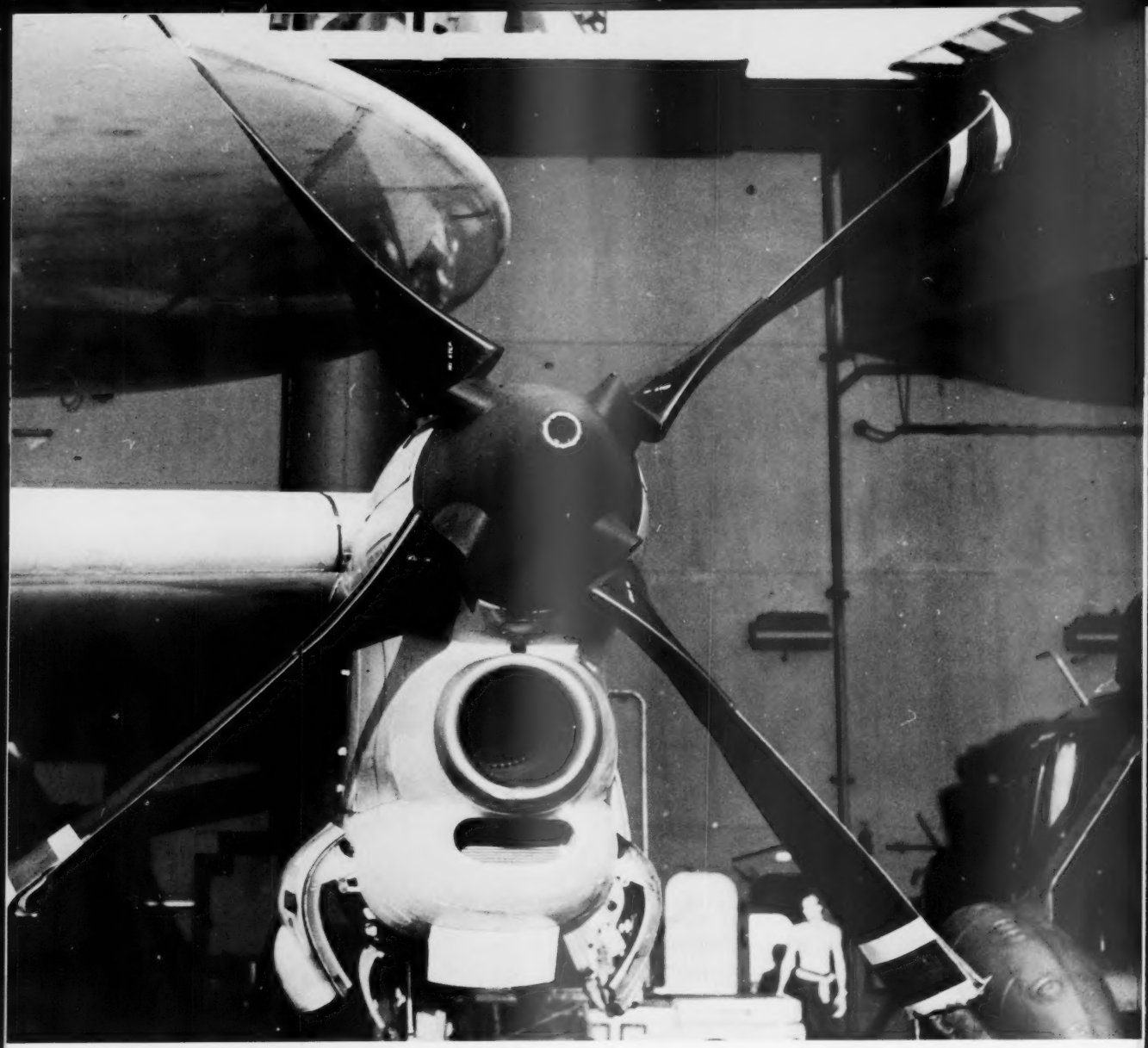


After disconnecting, the aircraft entered a left wing down,descending turn. The pilot was finally able to actuate the generator NORMAL-BYPASS switch to BYPASS and regained control of the aircraft utilizing normal trim and forceful control stick application. The yaw problem appeared to decrease enough for the pilot to drop gear and flaps. A straight-in shortfield arrestment terminated the flight with no aircraft damage.

While troubleshooting the yaw discrepancies, it was discovered that the rudder would move or creep in the direction of the last input whether from trim system or rudder pedals. The most probable cause was internal hydraulic leakage of the rudder actuator assembly (PN 5668094-505).

The reporting command noted that the pilot was in error in believing a flight control disconnect would isolate the rudder actuator assembly. He was commended, however, for "salvaging" the aircraft from an extremely unsafe condition.

He may have been commended for recovering the aircraft, but he sure made things tougher for himself than necessary. This pilot's lack of familiarity with aircraft systems and the hydraulic disconnect feature almost turned an unpleasant situation into a disastrous one. The **only** *function of the hydraulic disconnect feature (other than inadvertent disconnect or PMCF) is to fly the aircraft "by wire" in the event of* **total** *hydraulic failure. To disconnect when encountering control difficulties not caused by hydraulics failure is probably the* **worst** *thing to do since, without hydraulic boost, control becomes that much more difficult.* ◄



PROPS are still here!

By LCDR T. E. Duke, ASO
VAW-124

THE age of props has not yet ended. We still have first and second generation Grumman beauties turnin' and burnin'. The *Stoof*/C-1 and the E-2/C-2 turboprops are operating now and will be operating off our lines and bird farms for quite a while.

What's all of that got to do with you? Just this: I'd hate to see anyone lose his head because of a prop. What I've seen on the line and aboard carriers is too many troops not paying enough attention to the dangers of props – both still and rotating.

F'rinstance, a prop, even at attention, is dangerous and everyone should stay clear, right? Rog. Then how come I see pilots, linemen, and strays walking through

the prop arc? Anyone doing it is taking a shortcut – and asking for a permanent snooze.

Lemme guess. You're sitting there, reading this, in the readyroom or wherever, thinking who's this guy trying to kid? I'm not dumb enough to walk into/near/through a turning prop; I have eyes. Well, I hope you're right, but there are any number of reasons (late to man your bird, lack of sleep, too much bladder pressure, etc.) that might make you take a shortcut through a prop arc – right into eternity.

How many of you have ever noticed how far past the wingbutt those *Hummer* props stick out? The way I see some of you walking by them makes me know you give 'em no respect. Our crewmen *have* to work close, the rest of you do NOT. We need your help – everyone's help – to keep people clear. Just like everyone does when the air boss yells "Stand clear of the *Hummer's* props."

One thing you may not know is that while those props never take second seat to flesh, they are indeed fragile when opposed by hatches, yellow gear, JBDs, and the like. Those props can suck unsecured hatches right off the hinges, beat themselves up right goodly, then spit pieces of metal all around the flight deck. I'll clue you, no one wants to be around when one of those props decides to come apart.

You're absolutely correct in pointing out longstanding and continuing problems in properly and safely handling prop aircraft on CV flight decks. For example, here are some facts on the subject which indicate areas needing greater emphasis:

- *During a recent 3-year period, there were 63 flight deck mishaps involving death/injury where propwash or jet blast were causal factors.*
- *The small E-2/C-2 community has been the victim of 43 flight deck personnel caused crunches of static propellers, necessitating prop removal and return to overhaul, during the period CY70 through 74. Also during the same period, there were 49 other reported flight deck "dings" of the Hummer or Super Cod. Almost every one of these mishaps resulted in considerable downtime to one of the Navy's most expensive aircraft assets.*
- *Ordinarily, when a turning E-2/C-2 prop strikes an object (JBD/flight deck/GSE/human), there is multiple aircraft damage and serious injury/death. This statement might seem applicable to all propeller-driven aircraft in the fleet. However, the extent of injury and damage is dramatically less in other prop aircraft, probably due to lower rotational energy levels generated at the prop tip during ground operations.*

Related articles on this subject appeared in the February and July 1973 issues of APPROACH. You're right that props are *still here, but they need tender, lovin' care, just like the zoom-zooms and wop-wops. – Ed.*

The Enemies of Pilots

By Anymouse

THE unfriendlies and baddies are legion. Some call them names like gotchas, delta sierras, gremlins. Some even look skyward and use terms like acts of God. Just why God is blamed isn't known, but when mere mortals are unable to explain certain phenomena or events over which no one can exercise control, they pass the blame to the top. In our case, we did have control, and you'll find out what the enemies were.

We were scheduled for a 2300 preflight and a 0130 go. We had a good 7 hours to Islerock in the ocean, but it was right along one of those funny-looking lines on a chart all the way. But, it was rather evident that most of the crew had not had much rest for what we knew was a long flight. We had all been too busy having fun in the sun at a nearby resort.

A very senior PPC climbed into the right seat to start with, and a NATOPS qualified 2P was driving. Twice, we tried to fire up, and twice we had to call for some mechs to work their magic. The third time, though, after using the abbreviated before-start checklist, we cranked up and finally became airborne at 0330.

We dodged all the CBs on climbout and set power to max range at assigned FL220. Going feet wet, with no hope of seeing land for the next 2000 nm, we were confronted with rather nasty looking weather at the ITCZ. We slowed to 220 KIAS and selected engine anti-ice, then prop and wing deice upon entering the heavy stuff.

Everything went well for a while. Vectors from radar kept us in the light chop, with the props glowing blue from St. Elmos and the radios frying in the background.

The PPC suddenly turned to the second mech, who was in the flight engineer's seat, and told him specifically to deice the wings. The 2P looked out the window and noted light rime icing – nothing to get worried about. The second mech was a mite slow with his procedures, and the PPC got all over him to get cracking. At the same time, the PPC pushed the power up, and the 2P noted the airspeed drop off 5-10 knots, but that wasn't unusual under the conditions.

After a short period, the PPC set normal rated power, while the second mech deiced the wings like crazy. The 2P saw his airspeed accelerating through 240 knots and thought it about right with no ice on the wings with normal rated power. But, since the PPC had lots and lots of flight time and even more bad weather time, the 2P decided to be discreet and keep his mouth shut – until he figured out what was what. When he saw the power advanced to military, it was definitely time to sing. He also saw their speed pass through 260 knots, and he knew they didn't need all that power.

He glanced at the PPC's airspeed and saw 185 knots. Oh, oh! A quick look above at the overhead panel showed the windshield heat switched off. And guess what else was off? The 2P casually told the second mech to turn on the pitot and AOA switch. Instant correction. The PPC's airspeed indicator popped right up to match the left seat. Power and heart rates in the cockpit were retarded immediately.

It's immediately obvious what happened. The PPC saw his airspeed slowing to 160 KIAS. He assumed icing, but no one in the cockpit gave him credit for any smarts. This crew is one of the best in the Fleet. We had been flying together over 15 months. Someone, probably pretty tired, turned off the pitot heat during one of the false starts, and it isn't on the abbreviated checklist.

If the situation had been allowed to continue, the possibilities could make even a JO old. It's hard to say which is worse, turbulence in the stiff-winged P-3 at 260 KIAS or a pilot who thinks he's running out of airspeed and power. It's easy to sit in the readyroom reading APPROACH and pass out delta sierras, but it's something else to stand in front of the mirror and pull out gray hairs from your own head.

Complacency, hurry, and pressure are enemies of all pilots. They sit on everyone's shoulder, and with the slightest provocation, reach down and put a hand on the stick. ◄

INTERVIEW: CAPT Clyde H. Tuomela, USN

Aviation Safety Programs at Monterey

SAFETY is important to any organization. At the Naval Postgraduate School, safety is an education. In keeping with this concept, the Navy's Aviation Safety Program at Monterey is conducted on a 12-month-a-year basis.

The Director of the NPS Aviation Safety Program is CAPT Clyde A. Tuomela, USN, a former test pilot, fighter squadron skipper, and former deputy director of flight tests for F-14 weapon systems. Recently, APPROACH had the opportunity to interview CAPT Tuomela about aviation safety and the role NPS plays in improving it.

APPROACH: Captain, why do you think you were assigned this job as Director of Aviation Safety Education?

TUOMELA: It was back in 1972 that COMNAVSAFECEN, then RADM W. S. Nelson, thought the director should be someone with test pilot and aircraft research experience, as well as having extensive operational experience. I was just lucky that, when the screening was completed, my name was the one picked. Frankly, the complexity of aircraft has increased tremendously, as have the prices of these aircraft and equipments, and it's imperative that we eliminate those costly mishaps called "accidents." Maybe my background will be helpful in developing a flexible program of education in aircraft safety.

APPROACH: Just how long is the Aviation Safety Course nowadays and what does it offer?

TUOMELA: Up until January of this year, the course was 4 weeks long. We called it the Survey of Aviation Safety (SAS) Program. Students learned about aeronautical engineering, accident prevention and investigation, aviation psychology, physiology, and law.

In January, we renamed the course the Aviation Safety Officer (ASO) Course and expanded it to 6 weeks. The expanded program covers all of the material offered in the old one plus systems safety, Occupational Safety and Health Act (OSHA), industrial safety, and shipboard safety. Students will have more time to assimilate subject matter, conduct practice accident investigations, and write complete aircraft accident reports. They're also going to spend a little more time in field activities and a little less time in class each day.

"The CNO Directive right now is quite specific. Every squadron *will* have a safety officer. The idea is to get one expert in every squadron."

"Graduate courses in systems safety engineering should be taught in every graduate engineering curriculum."

"Our faculty covers the whole spectrum of aviation and the fields of knowledge we need to run a program of the magnitude we have."

Also, we've added a new course to give safety education to staff safety officers who have had ASO experience at the squadron level. The Advanced Safety Management (ASM) Course will be 4 weeks long.

APPROACH: How many students graduate from the safety school each year?

TUOMELA: Last year there were 362. This year it should be 361.

APPROACH: Why do so many people complete the program every year?

TUOMELA: The CNO Directive right now is quite specific. Every squadron *shall* have a safety officer. The idea is to get one expert in every squadron to help prevent accidents, rather than investigate them. I believe you can see the practicality of this approach.

APPROACH: Do all aviation safety officers come through your program?

TUOMELA: Yes. When they complete the program, we certify them as Aviation Safety Officers. They then return to a fleet aviation squadron and start practicing what they learned here in Monterey. After about 1 year as a squadron ASO, they usually move to a job as maintenance officer or operations officer . . . possibly from there to executive officer or commanding officer. We take great pride in the fact that the current Commander, Naval Air Force, Pacific Fleet, VADM Baldwin, is an Aviation Safety School graduate.

APPROACH: What do you think is really the advantage of having a school for aviation safety in a place like the Naval Postgraduate School? Why not an air station?

TUOMELA: To teach people, we really need the right educational environment and facilities . . . including special laboratories. If you look at the labs at the Postgraduate School, you'll discover we have the slow speed wind tunnel, demonstration devices for aerodynamics, machines for compression, tension, bending, and other special equipment. Also, our technical library is perhaps the finest in the world. Our students can extract technical guidance from the Department of Defense Documentation Center in Washington through an electronic computer terminal. And don't forget the school's outstanding faculty.

The location of NPS is also a definite advantage. It is close to several major aircraft manufacturers. Most of them are within easy commuting distance of Monterey. In addition, the Navy has aircraft repair facilities at San Diego and Alameda which every class visits. The outstanding facilities of Ames NASA Laboratory at Moffett Field and Edwards Air Force Base test facilities are also available.

We work closely with the Army at Fort Ord. We have a crash lab there and plenty of space to spread out actual aircraft wreckage. Since the crash lab is pretty isolated and secure, we don't have to worry about people getting into the debris.

Another factor is the weather. When we have a group of students studying in the field, they don't have to put up with uncomfortable extremes in the weather. The weather is moderate year 'round.

Thus, as you can see, we have an ideal combination of weather, location, facilities, resource organizations, and experts close by.

APPROACH: Captain, how much time do your students spend in the classroom?

TUOMELA: Less and less. I've already mentioned some of the places students get to visit. But one of the really choice bits of this program is what we call the safety survey trip. Each class conducts a safety survey of active fleet squadrons (Navy or Marine) at a west coast air station. One of our recent classes traveled to Hawaii to visit three organizations there.

We expect to get two things out of these visits. First, our students learn how to conduct a survey, dealing with all of a squadron's or air base's department supervisors and the enlisted people who support them. Secondly, our students conduct a survey that is as thorough as it is possible to be . . . but on an unofficial basis. The students look for deficiencies and formulate a survey report, but only the unit's commanding officer sees it. In that way, he can find out where the "kinks" are in his safety program and straighten them out before an official survey takes place, or more importantly, before an accident has to be investigated.

APPROACH: Do you take inactive reserve personnel into the program?

TUOMELA: Yes, we have definite quotas for reserves. As a matter of fact, there is great emphasis on the reserve program right now and we believe that it is essential to get their safety people here right away. Generally speaking, some of the best safety officers are found among reserve officers. Many of them are airline pilots with fairly recent combat and operational experience. There's a lot of talent there, and we want to keep these people interested in aviation safety.

APPROACH: What do you think has been the effect of the Aviation Safety Programs in decreasing accidents?

TUOMELA: In 1955, the school was started at the University of Southern California. At that time, the accident rate was 5.5 major accidents per 10,000 hours flown. Partly because of our program and improved methods of training and retraining of flyers, the accident rate has dropped to less than one major accident per 10,000 hours flown. This has occurred in spite of the increased complexity of airplanes and greater demands placed on them and their crews.

APPROACH: Let me ask you about your instructors.

How big a staff do you have and what do you look for in selecting them for your faculty?

TUOMELA: We have a staff of eight . . . four military and four civilians. One of the civilians, Professor Jim Nielsen, has been with the program since 1955. He's contributed a great deal to the Navy's success in reducing the accident rate and improving overall safety programs. Regarding qualifications . . . we like military people to be education-motivated, especially towards safety. We also need a good cross section of aviation types. I'm a test pilot and fighter pilot. CDR Jack Branson is a fighter pilot and attack pilot, and Marine Captain Jack Cress is a helo type. Our only nonengineer is LCDR Rich McCreary. He is often like a "breath of fresh air" in our operation. Since his business education background offsets the technical seriousness of his contemporaries, he looks at aircraft accidents and ways to prevent them in a pretty objective way.

Our civilian staff is interesting, too. I've already mentioned Professor Nielsen, a specialist in aerodynamics. We have Dr. Russ Bomberger, who has seven major advanced degrees, including doctorates in law and psychology. He was also chosen as the top teacher at the Postgraduate School last year by a vote of the faculty and students. We have Dr. John Kennedy, a physiologist and local physician in town, who teaches part-time. Finally, but not least, is Professor Les Wible, a former naval officer who has been an accident investigator for the last 21 years. He can look at a smoking hole in the ground and probably tell you what caused the crash. As you can see, our faculty covers the whole spectrum of aviation and the fields of knowledge we need to run a program of the magnitude we have.

APPROACH: Are there any special devices you use to aid your teaching?

TUOMELA: There are several research aids we're very interested in right now. We are considering use of a variable-stability B-26 aircraft owned and flown by CALSPAN, a research organization, originally Cornell Research Institute. It's equipped to change its flying characteristics. It can fly like a fighter, an attack plane, or a medium bomber. It's a very interesting aircraft. We hope eventually to have an aircraft like that for our program. We are also looking at a Northrop product which is a fixed-base simulator . . . and very expensive. We could make that one fly like any airplane. Either of these research units could be used to teach the phenomena of aerodynamics under controlled conditions.

APPROACH: Is there anything special you'd like to see develop in safety education at the Postgraduate School?

TUOMELA: Yes, I'd like to see graduate courses in systems safety engineering developed here at PG School. They should be taught in every graduate engineering curriculum. What I have in mind is a way of identifying and eliminating safety problems in hardware design. I suspect that design problems have more to do with accidents in Navy planes, ships, and weapons than people do.

APPROACH: One final question, Captain. How does an officer go about getting into your 4 or 6-week program?

TUOMELA: It's really quite simple. All of the necessary information can be found in a current CNET NOTICE 1520. If that doesn't do the trick, any interested officer can just give us a call on Autovon 479-2582. We'll be glad to get him on track to aviation safety education. ◄

Professor Jim Nielsen lectures on aerodynamics.

Professor Les Wible discusses accident investigation techniques.

Dr. Russ Bomberger researches law books in his office.

Even though NATOPS changes have been promulgated, knowledge in the Fleet as to the actual causes of dynamic rollover is minimal. This is the opinion of instructors at the Aviation Safety School where prospective helo ASOs have indicated a lack of knowledge of the subject.

Done In: DYNAMICALLY

By CAPT J. P. Cress, USMC
Naval Postgraduate School

ANY helicopter pilot performing a takeoff or landing on a sloping or rough surface has been subjected to conditions which, with even the slightest inattentiveness to developing rates of change in attitude, can result in almost certain destruction of his aircraft. Until recently, accidents occurring under such circumstances were simply checked off as pilot error or undetermined. An Air Force stability study into the loss of a CH-3C in 1971, however, has disclosed previously unknown characteristics of helos rotating about wheels or skids. This is known as dynamic rollover.[1]

[1] U.S. Air Force Aeronautical Systems Division (AFSC), Stability and Control Branch Report of 18 Jan 1971 entitled "Helicopter Control Data and Critical Rollover Angle." (A copy of this report is available upon request of the unit ASO or NATOPS officer by writing to: Aviation Safety Programs, Code 034, Naval Postgraduate School, Monterey, CA 93940.)

Since 1970, the Navy has determined that seven major helicopter accidents (14 percent of all Navy/Marine pilot factor accidents for this period) were attributable to dynamic rollover. What is it? When does it happen? Is it preventable? If so, how?

Perhaps the best way to describe dynamic rollover is to first describe what it is not. It is not a simple matter of the helo being placed on a slope steeper than it can negotiate, such as the case of an automobile rolling over after having been driven onto a steep embankment. This could be called static rollover. A typical Fleet helicopter, e.g., an H-3, normally configured and with rotors stopped, could withstand slopes on the order of 40 degrees from horizontal prior to static rollover. On the other hand, studies have shown that a helo may be irreversibly committed to dynamic rollover at angles less than 10 degrees (depending on the roll rate). It is clear,

Dynamic rollover was responsible for this strike.

therefore, that dynamic and static rollover are quite different.

Is dynamic rollover something which results from attempting to land on or depart from a slope in excess of the lateral trim limitation of the aircraft? Clearly there are slope angles which, although less steep than static rollover angle, are nonetheless beyond the lateral controllability of the aircraft. Therefore, even if the helicopter were plumbed onto such a slope, it would be impossible to raise it to skid (wheel) level for takeoff due to lateral control limits. The angle of slope which would require maximum lateral cyclic input to trim the skids (wheels) level is often referred to as the "critical rollover angle." (Values of critical rollover angles for some helos are shown in Fig. 1.) By no means must a helicopter exceed or even equal the critical rollover angle before it is committed to dynamic rollover. Thus it would be foolish for the helicopter pilot to consider himself invulnerable to dynamic rollover merely because he hadn't approached the critical rollover angle.

Aircraft	Static Rollover Angle	Critical Rollover Angle
UH-1	35°	17°
AH-1	33°	15°
SH-2	78°	(Not available)
SH-3	40°	17°
CH-46	(Not available)	(Not available)
CH-53	(Not available)	15°
TH-57	28°	10°

Fig. 1

Dynamic rollover, then, isn't simply a function of slope angle or lateral control authority. While these can be aggravating factors, a more direct contributor is buildup of angular velocity of the mass of the helo about the skid (wheel) in contact with the deck. The insidious aspect of the whole process is that acceptable roll rates and accelerations about the CG of the aircraft in flight are not acceptable about a skid (wheel) in contact with the deck. Thus, a pilot encountering dynamic rollover may not recognize it as such, because roll rates which precipitate it are within a range which he would normally allow in flight.

Two other factors work in conjunction with angular velocity. These are total mass of the helicopter and the distance of the CG from the landing gear. The three parameters can be combined arithmetically in the expression for angular momentum. Let angular momentum be represented by H, mass by m, distance of the CG from the landing gear by r, and angular velocity (roll rate) by w, then:

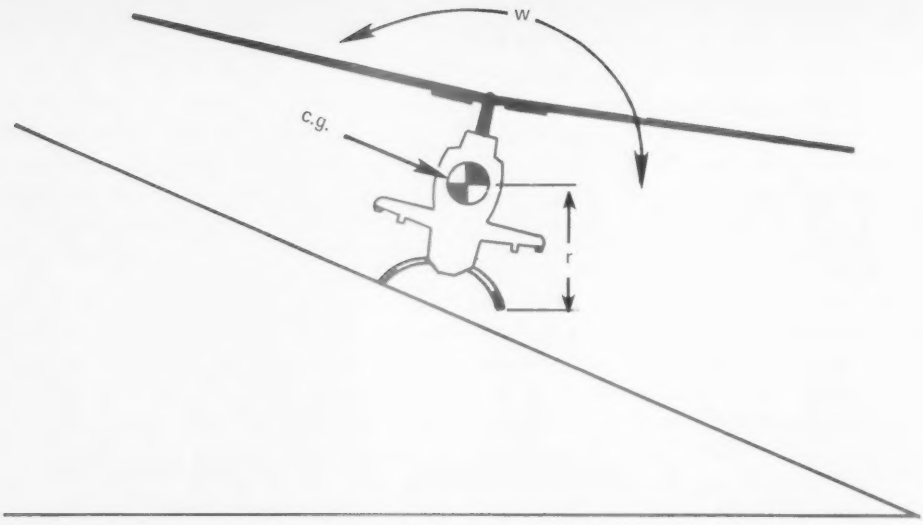
$$H = mr^2 w$$

Dynamic rollover is purely and simply the result of the helicopter developing excess angular momentum about the skid (wheel) in contact with the deck. It is clear from the formula that the greater the roll rate, the higher the gross weight, and the greater the lateral and vertical CG displacement from the gear, the greater the likelihood of developing angular momentum greater than can be countered with full opposite lateral cyclic. The inevitable consequence: a multimillion dollar fragmentation machine.

Often, in an attempt to meet other requirements, the designer necessarily forces a high CG on the pilot. Other variables, such as downslope fuel slosh or lateral cargo displacement, can compound the "r" contribution to the momentum in roll. To the extent that the mission may force high gross weight on the pilot, he also has only limited control of the "m" variable. The angular velocity developed in the initial stages of a rolling maneuver, however, is almost purely a function of the rate of the pilot's control input and ability to trim the aircraft. Thus to the degree that he is capable of smooth and deliberate control input, the pilot is a major factor in determining his initial susceptibility to dynamic rollover.

Let's suppose that everything is going against the pilot. The wind is blowing upslope. He's in a high CG, single-rotor helo with a high tail rotor. He's taking off at high gross weight, rotating about the right skid (wheel), which is upslope. With full right lateral cyclic he adds a little too much left rudder and pulls collective a little too abruptly. A roll rate develops upslope resulting in an angle to the upslope side of the skids level. The pilot counters with full left lateral cyclic. The upslope roll rate diminishes but doesn't stop. In less than 2 seconds the aircraft will become a statistic unless thrust, a major contributor to the angular roll rate, is rapidly but smoothly reduced. The pilot, being careful not to bounce on the downslope skid, *must reduce collective*. This may allow recovery even though lateral control authority had been exceeded.

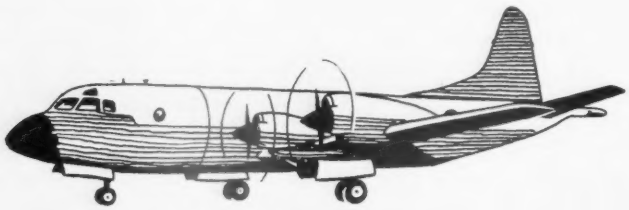
A great deal more can be said about rollover. For instance, it should be clear that it need not occur exclusively on slopes. It could result from a combination



Horizontal

of lateral cyclic application in conjunction with moderate collective, from corrugated steel matting or ridged macadam.[2] It could result from skid (wheel) contact with a heaving deck in combination with lateral stick input. It could worsen the already bad situation of a deck launch with one gear still chained. To a lesser degree, this rollover motion can occur about the pitch axis when inducing forward cyclic in conjunction with collective when commencing a takeoff roll with the toes of the skids or nosewheel in contact with the deck. In all cases, smooth reduction of collective is the most effective corrective action the pilot can take to prevent dynamic rollover. ◄

[2] *U.S. Army Aviation Digest,* May 1973 article entitled "Tilt, Rollover, Upset."



Fixed Gear

I couldn't believe my ears when the guy who couldn't believe his eyes told me about a P-3 in the bounce pattern with a landing gear problem. It seems as how the *Orion* had some malfunction or other. At any rate, the pilot made a full stop landing, cleared the duty runway, stopped, and had a crewman from the crash crew insert gear pins.

The aircraft then taxied out and bounced for an hour with the gear down.

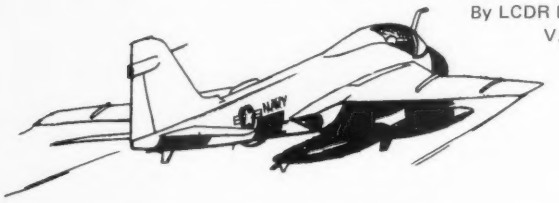
That *ain't* all! The pilot then accepted a little roundrobin, tower-to-tower clearance, and flew about 180 miles to pick up a couple of passengers – "gear down, pins in" all the way.

I've never heard such a story before and hope it'll never happen again. It appears to me that when smarts were passed out, the pilot of the P-3 was at the end of the line, and came up short.

Anonymous

'There's Something Familiar About All This'

By LCDR Richard J. Toft
VA-196



THE *Intruder* was assigned as lead tanker in a practice Alpha strike. After a normal preflight on the flight deck, a huffer was connected, and the port engine start sequence was initiated. As air was applied, the pilot noticed that the RPM wouldn't climb high enough to come around the horn and continue the start. The decision was made to discontinue the port engine start and start the starboard engine.

Starting air was applied to the starboard engine, and once again, the RPM did not rise high enough to continue the start. At this point, it was "obvious to all concerned that the culprit was a defective starting unit."

With little delay, another huffer was obtained, and a start was tried again on the port engine. This time, with the pilot and an engine troubleshooter looking on, a start was successful. It was noted that the RPM was very sluggish at the initial start phase, although within limits. The starboard engine was then started in sequence.

Generators were selected ON, but they wouldn't stay on the line. Attempts at resetting them were unsuccessful. (At this point, something began to register in the back of the pilot's mind about all this being vaguely familiar.) The pilot determined that by advancing the throttles slightly, the generators could be brought on the line and kept there.

Although all cockpit instruments were normal and no warning lights were on, the pilot couldn't help but recall a similar instance that had occurred. Based on the outcome of that hop, he asked for the senior troubleshooter before giving a thumbs up to the yellow shirt.

Two weeks earlier, such a sequence had been experienced by this same crew. At the time, there was a problem keeping the port generator on the line if the power was set at the idle stops. The deck troubleshooter, after servicing the CSD and not correcting the problem, determined that the engine was trimmed to the lower limits in the idle range. The aircraft was flown off to Homebase, and the generator worked fine throughout the hop. During the debrief, the trouble encountered on the flight deck was written up. Subsequently, maintenance found a large crack in the crossover bleed air line.

Back on the flight deck, the pilot asked the senior troubleshooter to open the port engine bay door and check for a hot air leak. When asked by the troubleshooter if he had a firewarning light or high engine temperature, he had to admit that he didn't, but that he was just acting on a hunch. To make a long story short, a hot air leak was found. The aircraft was downed. A crack was found in the same fitting as before (see photo).

The potentially disastrous results in this instance are obvious. When this incident and the previous similar incident were discussed at an AOM, it was apparent that all flightcrews were not aware of what had taken place. The subtle indications that the crew observed are not addressed in NATOPS.

At present, the best medium to convey this type information is through the flight incident/safety UR report. Then, it is imperative that squadron safety officers pick up the ball and see to it that the word is passed. The lesson learned here can apply to all types of aircraft and an endless number of situations. ◄

(Kudos to the pilot involved for realizing that something wasn't right and for taking the initiative in having the situation checked out. Attaboy! – Ed.)

Crack in crossover bleed air line.

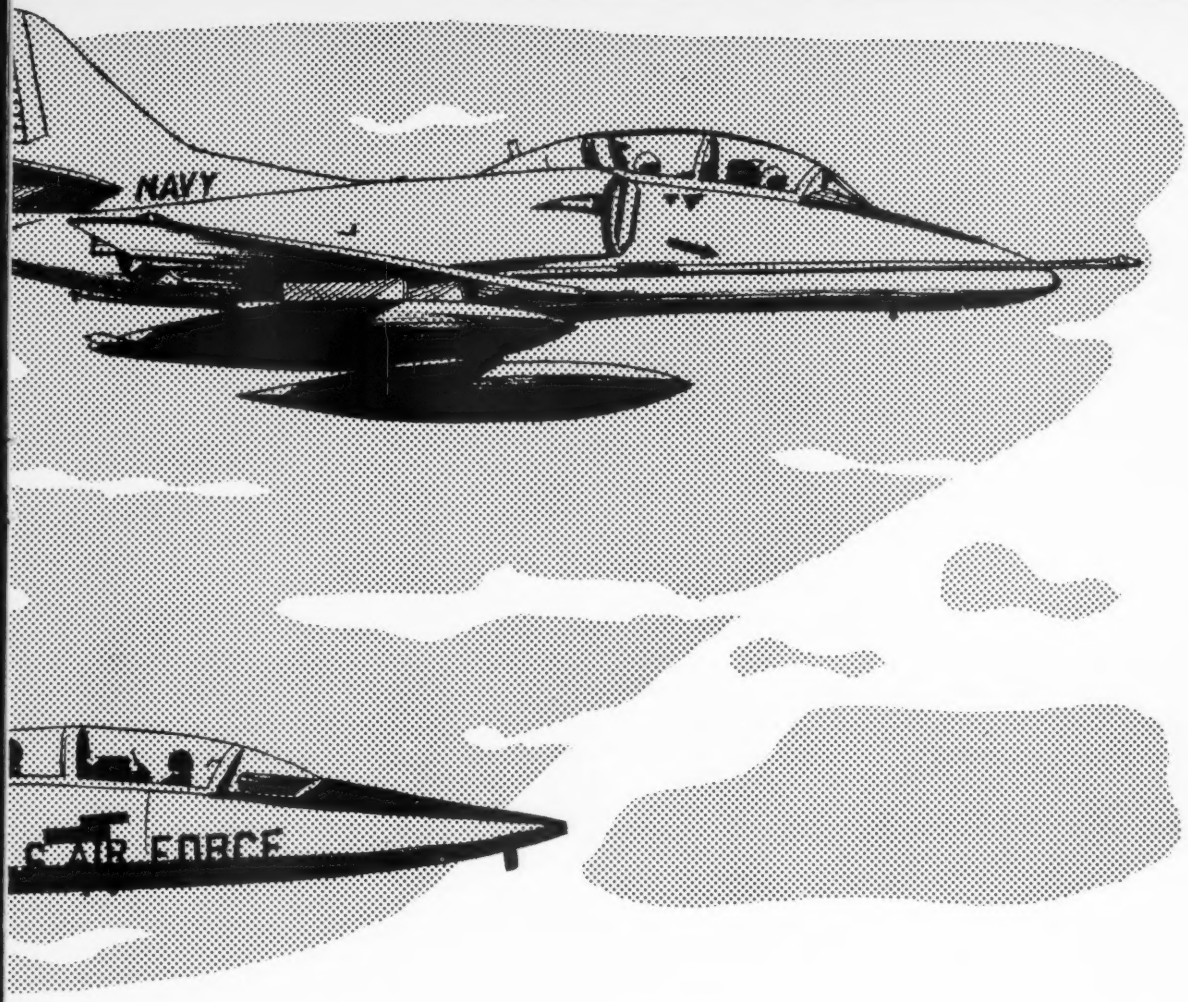
INTERSERVICE SAVE

ON 19 January 1975, LTJG G. R. Darwin, an instructor with VT-21, and his student 2/LT R. B. Simmons, departed NAS Cecil Field in a TA-4J for the return leg of a syllabus instrument flight to NAS Kingsville via NAS Meridian. Weather at Cecil was reported as 1500 feet broken. The entire southeast of the U.S. was reporting similar weather.

Jacksonville Center cleared LTJG Darwin to FL260 after departure from Cecil. When level at FL260 about 10 minutes later, Center informed him that an aircraft with an emergency was at FL270 and might be descending through his altitude at any time. LTJG Darwin reported he was IFR at FL260 and Center acknowledged.

Approximately 3-4 minutes later, Center asked LTJG Darwin if he could join with another aircraft and take him into Valdosta Municipal at Valdosta, GA. LTJG Darwin had his student look up Valdosta in the IFR Supplement and found that it had only a VOR navaid and 5600 feet of runway. LTJG Darwin considered the factors involved: the TA-4J is a TACAN-only bird; he did not know what type of aircraft he would escort; and the weather in the area was poor. Based on this, the instructor informed Center he would take the emergency aircraft to NAS Meridian.

After a short delay, Jacksonville Center approved and gave the *Skyhawk* vectors back to the east to effect the rendezvous. At this point, Jax Center identified the aircraft in extremis as an Air Force T-38. After several frequency changes, the A-4 and the T-38 got on the same frequency with Jacksonville Center. The T-38 was orbiting in a small clear area and the rendezvous was completed at FL260 without incident. The T-38 pilot, using emergency battery power, informed LTJG Darwin that he had an a.c. electrical failure, had lost his attitude gyros and navigation instruments, had a warning light indicating a pending d.c. power failure, and had approximately 20 minutes of fuel remaining.



Knowing that Cecil was VFR and only about 100 miles away, LTJG Darwin took charge of the situation. He immediately informed Jacksonville Center that he wanted radar vectors to NAS Cecil for a straight-in approach. The T-38 pilot vigorously acknowledged that anywhere was okay as long as it was VFR underneath! LTJG Darwin, again displaying excellent judgment, ascertained from the T-38 pilot that his final approach speed would be 155 knots. The Air Force jock also said he didn't want to talk anymore unless absolutely necessary in order to conserve his d.c. power.

The flight arrived at Cecil without further problems and the section made a clean penetration for fuel conservation. Gear and flaps were held until turning on final at 8 miles VFR under the overcast.

LTJG Darwin flew a 160-knot slightly flat approach to accommodate the T-38. At one mile, the T-38 was lined up and cleared to land, so LTJG Darwin dropped him off and a normal landing followed. LTJG Darwin continued to burn down and landed shortly thereafter.

Upon meeting the Air Force pilot at base operations, LTJG Darwin had to gracefully decline the offer for an evening of free libations at the club. He accepted the pilot's profound thanks for getting him out of a tight spot, and after refueling, continued on to Kingsville.

Well Done!

LTJG Darwin is a SERGRAD flight instructor. His experience should be of interest throughout the aviation community, particularly among younger pilots who infrequently have the opportunity for independent action. The rarity of this incident emphasizes the need to remind all pilots that procedures for assisting dissimilar aircraft are contained in the IFR Supplement.

The SERGRAD program has come under much scrutiny and occasional criticism since its institution several years ago. This incident is testimony to the caliber of airmanship and judgment found in the typical "Plowback." – Ed.

The desire to take medication is perhaps the greatest feature to distinguish man .

Self-medication with cold remedies has been implicated in three aircraft accidents over the last year or so. One of these accidents resulted in two fatalities.

Cold medication didn't turn up in the fatal TA-4J crash until post mortem study. At that time, the aviation pathologist found that, in violation of NATOPS, the student had taken a "therapeutic dose" of an antihistamine, probably within 6 to 8 hours of the accident.

After a 1000 takeoff for the fam hop, instructor and student proceeded to their assigned airspace to perform high work. At 1040, they requested a practice low precautionary approach to a touch-and-go. No unusual circumstances were reported to the tower. Tower cleared them for a touch-and-go following a gear check at 3 miles.

Right after touchdown, fire and smoke appeared under the *Skyhawk*. After a short roll, the aircraft became airborne and seemed to climb out under control. The tower and other pilots in the pattern broadcast that the aircraft was on fire. After several transmissions, the instructor announced his intent to turn downwind. Shortly thereafter, he acknowledged a tower transmission informing him of the fire.

The aircraft appeared to begin a right turn downwind, then rolled left with a loss of altitude. The tower called for the crew to eject, but this transmission was never acknowledged.

The crew ejected in the vicinity of 100 feet AGL, 90 degrees or more left wing down with an undetermined sink rate. They were outside the safe-ejection envelope.

The AAB concluded that the accident was caused by the student pilot's poorly executed LPA and ensuing hard landing. The instructor, they stated, failed to recognize a poor setup by the student, then committed a fatal error by trying to land the aircraft with a confirmed fire.

The level of antihistamine found in post mortem investigation may have had a significant effect on the student pilot's performance and could have contributed to the accident, according to the pathologist.

"Even if the effects of the drug were not contributory, consideration should be given to the underlying condition or conditions for which the drug was taken," he said. "These conditions could possibly have adversely influenced his performance."

The other two accidents occurred within weeks of each other – both in T-28s of the same squadron.

In the first, the student placed the aircraft in a high angle-of-bank/low airspeed turn during simulated LAEF (low altitude engine failure). Belatedly, the instructor took control and improperly attempted recovery from a stalled condition.

The aircraft mushed into a sparsely wooded area. It skidded and bounced along the ground, travelling some 95 feet, coming to rest against a 50-foot pine tree. Unable to blow the canopy, both men escaped by

. . from the animals.

Sir William Osler

crawling out through a hole in the canopy's right side. The instructor pilot and student were banged up some, and the student sustained second-degree burns of the lower legs in the post impact fire.

The IP had taken one teaspoon of antihistamine syrup that morning for mild nasal congestion. The medicine had been prescribed for one of his children. One teaspoon is half the normal adult dose.

Adverse effects of this medication are drowsiness, blurred vision, cardiac palpitations, flushing, dizziness, nervousness, and gastrointestinal upsets. As with every medication, the investigating flight surgeon points out, the effects of the drug vary with the individual and cannot be predicted with accuracy. Several times during this same week, the instructor had taken a similar dose just before going to bed.

The instructor's cold was "mild" and did not, in his opinion, require medical attention or grounding. He did not take medication while flying and noted no dysbarism. On the day of the accident, his cold seemed to be "breaking," but his runny nose was annoying so he treated it with the antihistamine. He says he felt none of the adverse effects described while flying that day.

"Because of this prior experience with the medication," the flight surgeon states, "it is reasonable to assume that the instructor did not experience a severe adverse effect during the accident flight. However, the drowsiness induced by antihistamines, especially at lower doses, may be very subtle and not necessarily noticed when attention is focused on a demanding task such as flying. The medication must, therefore, be considered to have played some role, however minor, in the causation of this accident."

In the second T-28 accident, the instructor pilot prematurely retracted the landing gear during takeoff roll. Realizing his error, he placed the handle back in the down position, but, at the same time, he nudged the stick forward and reduced power. The aircraft stopped on the runway with both mainmounts extended and the nose gear partially collapsed. The aircraft skidded to a gentle stop in the center of the runway on two fully extended mainmounts and a collapsed nose gear. Neither pilot was injured.

Normally, the pilot states, he does not raise the gear until he is about 25 feet in the air and at a safe airspeed. On this takeoff, he did not follow that procedure. During rollout, he felt "bumps" on the runway. At what he felt was liftoff speed, there were no more bumps, and he thought he was airborne.

At 0700 the morning of the flight, in violation of NATOPS, the instructor had taken an antihistamine capsule for a runny nose and two aspirins for headache. *(The possibility exists that a detrimental synergistic effect might have occurred from the two medications. A synergistic effect is produced when agents – in this case, the antihistamine and the aspirin – act jointly so that their combined effect is greater than the sum of their individual effects. – Ed.)*

The instructor should have known better. He had attended what the investigating flight surgeon describes as "the normal lectures" on self-medication and the importance of checking with a flight surgeon before taking a questionable drug. In addition, right after the earlier accident described above, the squadron had held a safety standdown. A memorandum dealing with self-medication had also been issued following the TA-4 crash. All pilots had read it.

The instructor said he was aware that the antihistamine manufacturer recommends taking one capsule every 12 hours and that the effects of the medication probably lasted 12 hours. He denied knowing that the drug was a "grounding medication." This, the flight surgeon said, does *not* excuse his failure to check this out with medical authorities.

While waiting for an aircraft between flights, the instructor felt sluggish and had to close his eyes "for just a minute." But he had this feeling frequently during an average flying day, even when he wasn't medicated, he said. He also stated that he was unaware of the 24-hour grounding mandated by NATOPS after a grounding chit was signed or suspicious medication had been taken.

What else can we say?

Over and over, APPROACH has printed articles, the gist of which is "self-medication is dumb, and it's dangerous."

We'll close this latest plea with a quote from a flight surgeon which might give all self-medics some pause.

"It's just as unreasonable to fly with medications in your bloodstream as it is to drive with the wrong type of gas in your fuel lines. Regardless of what any medication does or doesn't do, there's one basic premise that every aircrew member must understand – *a drug is a poison* in that it alters body functions. If a drug didn't interrupt or modify some body process, it wouldn't be a drug. Just because it's available over the counter at a drugstore makes it no less risky. Taking medication boils down to therapeutic poisoning.

"Every drug – no matter what it is – in addition to the therapeutic poisoning, may offer a bonus and unpredictably affect a variety of organs or their function. Everyone has noticed that many antihistamines not only dry up your nose but also make you drowsy or perhaps blur your vision.

"These bonus effects are fine if you're in bed; tolerable if you're in the office; dangerous if you're driving a car; and suicidal if you're flying." ◄

Bravo Zulu

CAPT John C. Burns, USMC
VMA-133
MARTD Alameda

MOMENTS after departing NAS Alameda as No. 2 of a section cross-country flight, CAPT Burns heard a loud "thud," followed immediately by illumination of the firewarning light, and an abrupt pitchup of his A-4 *Skyhawk*. After broadcasting his intentions to land immediately and relaying the nature of his emergency, CAPT Burns experienced a radio failure with additional warning lights and other electrical system failures. He commenced dumping fuel and maneuvered his crippled bird for a downwind entry.

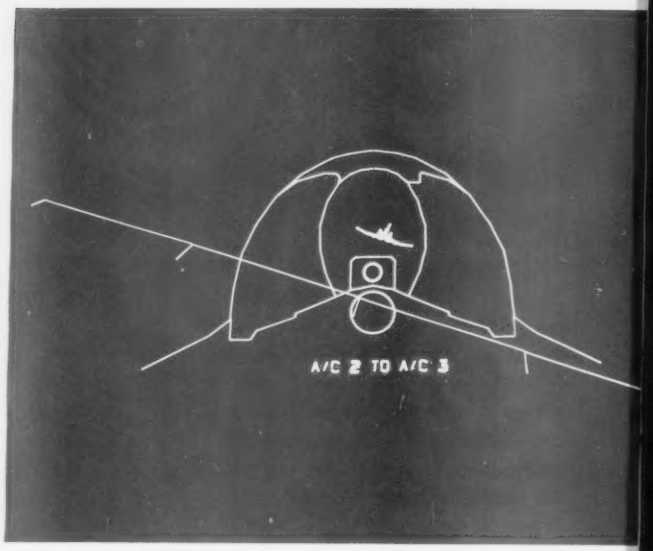
A seam weld in the forward portion of his tailpipe had failed, allowing engine exhaust gases to escape into the empennage. Fire spread quickly and flames were observed burning through a hole in the tail section. Downwind, CAPT Burns lowered his landing gear and flaps just prior to losing all utility hydraulic fluid. Combating erratic elevator control responses, CAPT Burns cleared numerous sailboats beneath his flightpath then jettisoned his two 300-gallon fuel tanks. Despite reduced thrust, electrical and hydraulic failures, control problems, and extensive structural damage, CAPT Burns effected an emergency arrested landing. Total flight time was 7 minutes.

CAPT Burns demonstrated the judgment and skill of a true professional in preventing loss of an aircraft in a densely populated area.

Well Done!

DO you remember the "good old days" when the hassle was won in the debrief by the gent with the loudest voice and quickest hands? That may have been good sport, but it failed to serve the desired function of improving aircrew performance in air combat maneuvering. The pocket-sized cassette tape recorder did. This little instrument was a big step forward in that most tactical communications could be preserved as an aid to one's memory in reconstructing engagements. But this, too, left a great deal to be desired in analyzing the effectiveness of the tactics employed.

Would you say that we need a system with real-time depiction and analysis of multiple aircraft positions? Is it desirable to have instantaneous weapons firing analysis, communications, cockpit-to-cockpit viewing, warning of present or potential safety hazards, and the ability to retrieve all of this data and more for debrief and critique? If the answer is yes, then the ACMR (air combat maneuvering range) is just the thing for you.



Air Combat Maneuvering Range

Submitted by VF-84

The ACMR was developed by Cubic Corporation of San Diego along with numerous subcontractors for the U.S. Navy and is currently operational in the Dry Wells desert adjacent to MCAS Yuma, AZ. The east coast ACMR, which will be located east of Kitty Hawk, NC, is scheduled to be operational in March 1976.

A brief description of the functional components of the ACMR follows:

CCS (control and computation subsystem) – A mobile system of three Sigma-9 computers provides real-time data of aircraft performance, interaircraft relationships, and present or potential safety hazards. The system automatically stores all data pertinent to the engagement as well as that presented "live" in the Display and Debriefing Subsystem.

AIS (aircraft instrumentation subsystem) – Each aircraft carries a *Sidewinder*-like AIS pod. It provides the computer system with data from which aircraft position, angle-of-attack, altitude, airspeed, G, and angular rates are derived. It also monitors weapons bus switches and AIM 7/AIM 9 data for hit or miss analysis after each shot.

TIS (tracking instrumentation subsystem) – A system of seven unmanned solar-powered remote units and a master station interrogate AIS equipped aircraft on the ACMR and provide the CCS with accurate, simultaneous ranges to each aircraft. Four engagement aircraft and 12 escort aircraft may be tracked simultaneously, but only four aircraft may be provided complete performance data.

DDS (display and debriefing subsystem) – This is comprised of a double-ended van, each end of which has a status display screen, a three-dimensional alpha-numeric display screen, a keyboard for computer entry, UHF communications selectors, hard-copy data printout selectors, and various display controls. The status display screen is used to set up the parameters of each engagement and to record missile/gun hit or miss data. The graphics display screen provides three modes of operation:

- A variable plan view offers a display of the flight which can be rotated from a side view to an overhead view.
- The range display projects real-time aircraft images maneuvering over the ground plane in a manner designed to produce the three-dimensional effect seen in perspective drawings. Depth perception is enhanced by changing the size and brightness of the aircraft images as they approach and recede.
- Lastly, the cockpit view display presents what is being seen from the front cockpit in the 60-degree high to 30-degree low area within 45 degrees of the nose.

Be assured that one can quickly learn not only to use the ACMR to great advantage, but to control its operation (although it may seem that this system is more suited to Buck Rogers than to real live fighter crews). A key link in the ACMR chain is the GIP. Although this acronym stands for ground instructor pilot, it is effective and useful to train both pilots and RIOs to operate the display and debriefing subsystem.

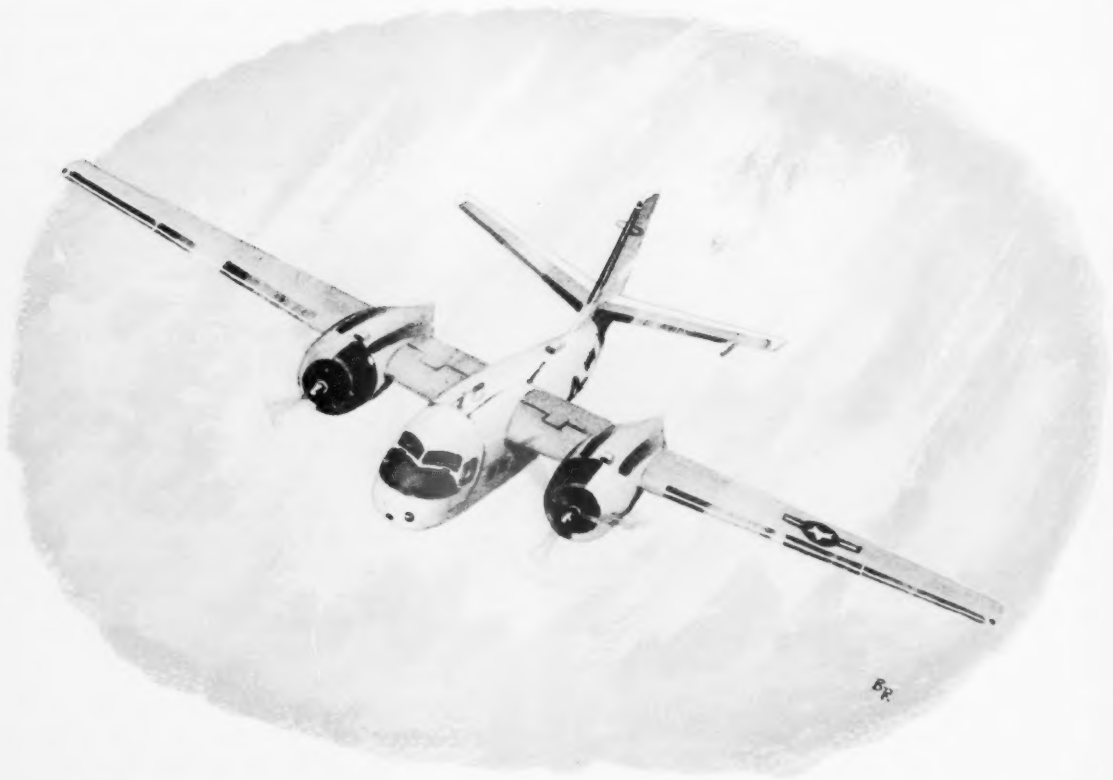
Fighter Squadron EIGHTY-FOUR had the opportunity to utilize the MCAS Yuma ACMR for 8 days in August and September 1974. During this period, with superb VF-43 adversary support and a sustained effort by VA-176 tankers, the "Jolly Rogers" were able to fly 70 ACMR sorties (thus setting the range utilization record). A remarkable gain in aircrew knowledge and performance in the ACM environment was achieved. Much of the credit for this improvement must be given to the value of the display and debriefing subsystem as a learning device. Exhaustive, penetrating debriefs and replays were conducted after each ACMR sortie. These debriefs often lasted five times as long as the actual flight, but the aircrews were able to analyze each facet of the engagements from every angle and with great precision. Individual and section performance, both in maneuvering and communications, were carefully examined and weak points highlighted for correction.

The installation of the east coast ACMR will surely enhance the readiness of our fighter squadrons. March 1976 cannot come too soon. ◄

The flight I am about to recount was one of my first as aircraft commander. Now, from the vantage point of my desk labelled "ASO" and with the benefit of 20-20 hindsight, I shudder to recall . . .

Cancel My IFR.

By Anymouse ASO



AN HOUR before scheduled departure time, my copilot showed me the stopover flight plan and accompanying weather brief. The first stopover was to be at a civilian field to deliver a Code 5 and party of four. The forecaster at NAS Departure did not have a terminal forecast for our first stop, so he gave us the weather for a major airport, *only* 25 miles away. Close enough, I thought. The profile for enroute and destination looked like VFR all the way . . . can do.

Preflight, runup, and takeoff behind us, I gave it to the copilot, disengaged my mind from the job, and treated myself to a few moments of self-satisfied daydreaming, thinking how great it was to be pilot-in-command. Approach control shook me out of my reverie with a blast on heading and altitude changes in preparation for landing. Field in sight, 12 o'clock, then the first surprise.

"Navy Alpha Omega 432, present position 5 miles east of the beacon, cleared for the approach, report beacon inbound."

My copilot dived into the navbag to locate the approach plate. No joy; the NDB approach to this out-of-the-way place was not in the FLIP pubs.

"Approach, Omega 432, we have the field. I'd like to cancel IFR for a visual."

"Roger 432, I show you cancelling IFR at 1345. Contact Unicom on 122.8. Good day."

Mildly irritated at not having the approach plate onboard and at losing the opportunity to fly the approach, I felt even more irked by my obvious lack of professionalism and suffered from perhaps a larger than healthy sense of pride.

"Unicom, Navy Alpha Omega 432 overhead at 3000 for landing and traffic advisory."

"Omega 432 present weather ceiling partially obscured with one-fourth mile in ground fog. Say your

intentions."

Terrific, I thought disgustedly. Code 5 aboard, field below VFR minimums, no approach plate onboard, and I just cancelled my IFR clearance. What a great start as aircraft commander!

"Stand by."

Feeling the presence of the brass in back and very much aware of my newfound status, I decided to press on.

"Ah, Unicom, we'd like to try a visual one time. We've got the runway in sight. Looks like no problem from here."

The man on the ground seemed skeptical, but voiced no absolute refusal. On downwind, we began to run into reduced visibility, but my confidence suffered no doubts. Somewhere on base, we hit it, first patchy, then a thick, swirling mass of grey – 300 feet AGL.

"Let's go around."

My copilot agreed.

Climbing through 800 feet, we crossed the threshold at a 30-degree angle. Not even close. Once again VFR on top, I made one last pitch to get on deck, convincing Unicom to give us the approach procedures over the air, while we drew our own approach plate. The voice, now getting familiar, sounded distinctly smug.

"Omega 432, Unicom. We're going to contact Approach to verify that you have clearance for this approach."

I sensed a definite trace of hostility in his voice.

Going through the necessary steps to ensure we didn't step on it any more severely than we had already, we found ourselves in the same murky position the second time around. Ready to bingo to our alternate, I saw a hole open up revealing the numbers sliding by the copilot's window.

Chop power, slip right, and dive for the deck . . . arrival! Horrified to see the far end of the runway looming, I slammed the binders on max hold, now not even worried about how it felt back in the cabin. We came to a shuddering, smoking halt 50 feet from the grass and an accident report.

Epilogue. The rest of the day was a bit of a blur. The passengers were unaware of the circumstances, but I still had to do some fast talking to convince the FAA safety rep that we were 100 percent legal.

The can-do spirit has an uncanny habit of surfacing when the pucker factor goes up, but we can never afford to let it cloud judgment. The combination of a poor weather brief and no approach plate onboard added up to only one thing: poor mission planning. The urge to succeed under the adverse conditions of poor mission planning, bad weather, and a healthier than necessary dose of the can-do spirit led to judgment decisions which otherwise might not have been made. ◄

Who's Got the Bubble?

RECENTLY, an S-2 pilot declared an emergency because of fuel fumes in the cockpit. He subsequently landed at Homebase and shut down after clearing the runway. The duty officer directed maintenance control to tow the aircraft back to the hangar. Attempting to be efficient, the SDO assigned the pilots a replacement *"Stoof"*, which another pilot started preflighting immediately.

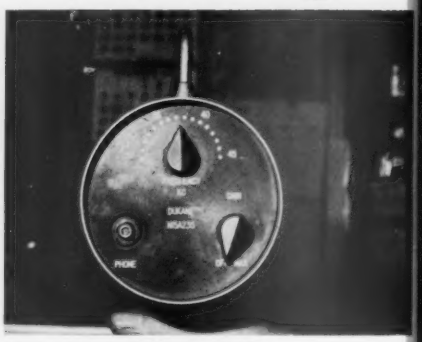
The pilots left the first aircraft and proceeded directly to the other without stopping by at maintenance control to complete the paperwork from the first flight. They also dropped off a flight crewman but did not instruct him to report the gripe to maintenance control. They joined the other pilot, completed the preflight on the new bird, and took off again to complete the instrument training mission.

Later in the day (change of duty officer and maintenance control crew), the original aircraft (the one with the fuel fumes) was serviced, dailied, preflighted, and released for flight by maintenance control. The maintenance control chief had seen part "A" of the yellow sheet with the previous pilot's signature and no closeout. He should have been briefed by the man he relieved as to the status of the aircraft, but because this was not done and the pilot never completed the *paperwork*, it was *assumed* the aircraft had no gripes from the previous flight. Absolutely no work had been done on the aircraft to solve the fuel fumes problem.

Two student aviators were issued the aircraft for their first night solo. They preflighted it, turned it up, and were taxiing out for takeoff when the original first pilot, having finished his second flight, finally came back and completed the writeup from the first flight. Noting the paperwork downing the first aircraft, an alert third class petty officer and chief petty officer on duty at maintenance control, realized the aircraft had been issued for flight. They immediately notified the duty officer who recalled the plane prior to takeoff. A simple communication failure, but it could have resulted in real trouble. ◄

Acoustic "Pingers"

UNLOCKING Davy



Direction finder

In 1972, an F-4 *Phantom* crashed in coastal waters. Investigators determined that there was a need to salvage the aircraft in order to determine the cause. Fortunately, the water depth was such that salvage was feasible. There was a problem, however, and that was *locating* wreckage.

Offhand, this did not seem to be much of a problem since the crash was observed by an eyewitness, and there was floating debris on the water. Nevertheless, detection was not an easy task. Floating debris is almost always quickly displaced from the crash site because of wind and water currents. In this case, it was necessary to search a 23-square-mile area, using a side-looking sonar and a precision navigation system which had to be rented from commercial sources at a cost of $80,000. In addition, over 900 man-days of effort were expended in the search, not to mention the cost of the search ship. But even at this expense, the operation was a great success compared to many other searches. As a matter of fact, up to $300,000 was expended in another important

Dipping hydrophone in water

Receiver-hydrophone
and direction-finder unit

Jones' Locker

search which in the end proved fruitless, leaving investigators with no sure way of determining the cause.

By way of contrast, a valuable Navy test aircraft was lost in the Chesapeake Bay in 1972. In this case, the wreckage was located on the bottom of the bay and marked with a buoy only 95 minutes after the search began. Total cost of the search was only a few hundred dollars. Just a matter of luck? Not at all! This aircraft was equipped with a simple, low cost device which guided the searchers unerringly to its location. The device? An underwater acoustic locator, known more familiarly as a "pinger."

Let's examine briefly how this search went. The test aircraft crashed at 1400. By 1500, personnel at the Naval Air Test Center, who were familiar with acoustic pingers, were underway on a Navy crashboat. Upon arrival in the search area, they found debris covering a 4-square-mile area. Immediately after dipping the hydrophone (on the receiver) into the water, a pinger signal was received. The direction of the wreckage was determined by rotating the hydrophone until maximum audio signal was obtained. By stopping the boat every 300-500 yards and submerging the hydrophone in the water, tracking the signal was relatively easy.

The signal was followed for about 1½ miles, until the sound direction reversed 180 degrees, indicating they had passed over the wreckage. Simultaneously, a Navy diver arrived on the scene, and the NATC men transferred to his boat. The Navy diver took the receiver and slipped into the water. Even though visibility under water was less than one foot, he was able to follow the signal. After travelling about 100 yards underwater, he bumped into the wreckage. Total time of search – 95 minutes.

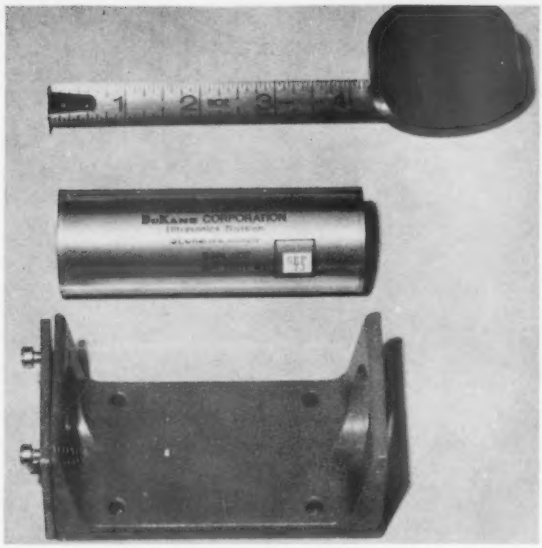
The underwater acoustic locator (pinger) is a small beacon transmitter about 4 inches long which weighs about 9 ounces. It is attached to the aircraft structural frame and is designed to survive severe crash conditions and commence operating upon water entry. The transmitter has a self-contained power supply enabling it to operate continuously for 30 days after water entry with a range of 2-3 miles.

There are several receivers in the Navy inventory which are directional, enabling users to "home" in on the pinger. One receiver weighs less than 5 pounds and can be operated remotely in much greater depths by special rigging. When conducting the search phase, the receiver is placed aboard a small water craft and a hydrophone dipped into the water. When wreckage location is fixed approximately, the receiver is transferred to a diver who fixes its exact location.

Pingers have long been used in the Navy to locate practice torpedoes, mines, spacecraft nosecones, etc. Installation of pingers in Navy aircraft has been advocated for more than 15 years. Yet today, relatively few Navy birds are so equipped. There is one bright spot, however. In 1972, CNO authorized and directed installation of pingers in all RDT&E aircraft. This program has now been largely accomplished. A valuable byproduct of this effort has been the preparation by NATC of a booklet which details pinger installation instructions for practically all aircraft in the Navy's inventory. Thus, pingers can be easily installed, even at the organizational level. Maintenance is simple, too, consisting only of annual battery replacement.

Unfortunately, except for RDT&E aircraft, the Navy has not been able to fully benefit from this relatively

10 Khz pinger



37 Khz pinger and mounting bracket

low cost location aid. The reason, as always – shortage of funds. CNO has authorized the installation of pingers in Navy service aircraft, but NAVAIRSYSCOM aircraft project managers (who are currently responsible for funding) have not yet been able to identify the funds.

Another factor is time. A complete program which includes writing of specifications, contract bids and awards, equipment delivery and installation is estimated to involve 4 years and 1.5 to 3.5 million dollars, depending on the system selected (i.e., a 10 KHz pinger, a 37 KHz pinger, or both). Relative merits of the 10 KHz and 37 KHz pingers are still under discussion. All things considered (range, size, weight, cost, operating life, and compatibility of existing receivers), NAVSAFECEN investigators consider the 37 KHz to be greatly superior to the 10 KHz in a single installation. The ideal would be a dual installation which would provide a stronger signal for the first 3 days (the life of the 10 KHz battery). Costs, however, are appreciably higher for the dual installation.

An important consideration is the commercial availability of a 37 KHz pinger at an approximate cost of $200 per aircraft. It is the same pinger that has been approved by the FAA for installation in civil airliners. Equally important, compatible receivers are on hand at a number of accessible locations, i.e., Naval Air Test Center, EOD units, and harbor clearance units. NAVSAFECEN has recommended to CNO that, pending full program implementation, type commanders/ controlling custodians be granted the option of providing acoustic locators from their own resources, initially selecting such high cost aircraft as the F-14 and S-3. Such an option would be greatly simplified by the assignment of a national stock number to available commercial devices.

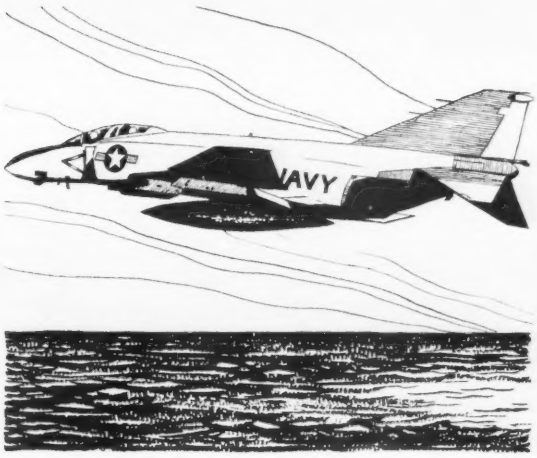
There is little doubt that should an F-14 or an S-3 go down in coastal waters, an all-out effort for rapid wreckage recovery would ensue. Acoustic locators would greatly increase the chances of location of wreckage and significantly reduce recovery time at a considerable dollar saving in search costs. Moreover, an acoustic locator is the *only* feasible way of locating an aircraft wreckage in deep water. Since salvage of selected components is technically feasible (although expensive) even in very deep water, this takes on more importance. Any doubt that pingers can do the job was eliminated by the 1974 wreckage discovery of a TWA 707 pinger-equipped aircraft which crashed off the coast of Greece in 11,000 feet of water.

A physical examination of wreckage is often the *only* way that positive cause factors can be determined in an accident which involves material failure. Acoustic locators can point the way to underwater wreckage (and discovery of cause factors) which might otherwise remain hidden in Davy Jones' locker. When the facts are known, conjecture is eliminated and investigators can confidently propose corrective measures which address known causal factors. ◄

Experience is what enables a man to make an old mistake in a new way.

Ace L.

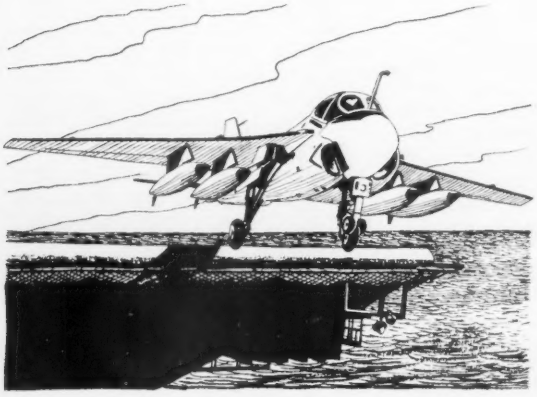
JETTISON STORES?



HAVE you thought about under what circumstances you would jettison external stores? Perhaps you should. Two recent accidents could possibly have been prevented by such timely jettisoning.

KA-6D Flaps-up Launch. A KA-6D was launched from a CVA with the flaps/slats in the full up position. The aircraft left the deck with less than flying speed for its existing gross weight. Had the pilot jettisoned his four full drops, weighing a total of 8952 pounds, he would have reduced his gross sufficiently for the bird to have flown away safely.

It is suspected that prior to launch, the pilot inadvertently moved the flap lever forward while setting the throttle friction after moving the throttles to MRT. Unfortunately, neither the flightcrew, the catapult officer, the final checker, nor the air officer noticed the flaps/slats up configuration prior to launch. Two flight deck troubleshooters did notice the unusual configuration but were unsuccessful in getting the cat officer's attention in time.



F-4J Engine Failure. The second case was an F-4J taking a cat shot also. All indications were normal, and the cat officer touched the deck to signal launch. As the deck edge man reached to press the launch button, the aircrew heard a loud bang and felt a thump. Witnesses observed a large flame coming from the starboard engine tailpipe. Almost simultaneously, the *Phantom* was launched. Both crewmen felt something was wrong during the catapult stroke. Witnesses observed the flames from the right engine extinguish about halfway down the track. The left engine was observed in normal afterburner.

The aircrew did not experience normal acceleration once airborne and could not climb. The pilot raised the landing gear and went to half flaps. He continued trying to fly the aircraft for about 20 seconds, but when it became clear that the bird was going into the water, both crewmembers successfully ejected.

The mishap board concluded that the right engine had failed because of FOD. The board also concluded that had the pilot jettisoned all external stores, he would have reduced gross weight to about 43,000 pounds, which would have permitted the aircraft to continue flight with half flaps and landing gear retracted.

Preconditioning Needed. An endorser to the KA-6D mishap report stated:

"During the launch evolution, time available to recognize an abnormal situation and execute proper corrective action is extremely limited. Pilots must be preconditioned through reiterated training to execute the 'immediate action emergency' procedures, i.e., gear up, emergency stores jettison, etc., whenever an aircraft fails to perform normally immediately following a launch."

Jettison stores in a proper situation? It could save the day for you *and* the aircraft. Think about it! ◄

If you are one of those people who like to worry, you sure have a lot of topics to choose from these days.

Ace L.

Letters

Innovative

NAS Memphis – In order to generate some interest in the "Read and Initial" folders and the "Hot Item" board, I cover each one of them with a different safety poster. As a rule I try to relate the poster to a monthly theme (see photo).

Fleet Tactical Support Squadron FIVE THREE is a reserve transport squadron located at NAS Memphis. We have been awarded the CNO's Safety Award for the last two consecutive years. Last year we received the Noel Davis Trophy for excellence. In addition, we are implementing the Squadron Safety Department Concept.

LCDR M. G. Burkart
ASO, VR-53

"It's a bird, it's a plane, it's . . . "

NAS Lemoore – While proceeding on a routine cross-country flight from NAS Lemoore to Tinker AFB at FL330, I observed a gold-colored sphere approaching from my 12 o'clock position at co-altitude. Visions of UFOs raced through my mind until, as the sphere swept past my port wing, I recognized it as a balloon with two box-like objects suspended below it. I immediately called Albuquerque Center to see if they knew anything about it. The controller said, "No, but I'll check," and I started wondering if I should get my peepers checked when I returned home.

I was later informed that my "UFO" was, in fact, a scientific experimentation balloon launched from Winslow, AZ. (I was 35 nm southeast when I saw it.) The controller also told me that the balloon was supposedly radio-controlled from the ground. Well, they skillfully controlled it right into the middle of the jet route.

As I switched to the next sector frequency, the center controller was informing other aircraft in the vicinity of the wayward balloon and receiving replies in various tones of excitement, concern, and disbelief. I have never encountered such an uncontrolled hazard to aerial nav before and now wonder just what the future holds.

I am unaware of the frequency of this type of occurrence, but am sure that it will be of interest to aviators in all facets of flying.

LT C. F. Brown, Jr.
VA-164

Got a Track on That Tower?

NAS Norfolk – "Wind two six zero at eight, cleared for takeoff. No reported traffic."

"Clear left."

"All clear over here. Match my torques, gages look good . . . we're off. Hold it! Hold it!"

"Where'd that tower come from?"

As a safety officer, the above incident was related to me as an area of concern to pilots operating at our heliport. A heavily travelled thoroughfare crosses the departure end of Runway 27. Unnoticed by both the tower operator and our heroes above, a large crane with its boom vertical was moving down this road. Although it was moving slowly, it was able to cross the intended path of flight in the short time it took to check cockpit instruments and hover power. Luckily, the helo crew was able to avoid ruining many people's afternoon – as well as their own.

While most airports have warning devices to alert earthbound operators and stop traffic flow across departure routes for fixed-wing aircraft, few, if any, helo pads are similarly equipped even though they more often than not have roads bordering them. Further complicating the situation, many helo pads are infrequently used. Surface traffic in the area is therefore unaccustomed to thinking about low-flying aircraft and the hazards they create.

Helo pilots, take one last look around before breaking your hover. As elementary as this sounds, how well do you follow it? Do you begin your flight watching the world or your torque gage? When identifying an obstacle, note its

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: APPROACH Editor, Naval Safety Center, NAS Norfolk, VA 23511. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

possible mobility and probable path. Don't let a tower run into you. Keep the possibilities and probabilities on your side. Make the safety officer smile.

LT R. W. Basore, USN
ASO, HC-6

Close the †$%&*+! Door

NAS Ashore – After briefing with the pilots of two other S-2s, my CAPC and I manned our trusty *Stoof* for night carquals. On preflight, a possible fuel leak was discovered in the starboard wheelwell of our bird. I remained outside of the aircraft on start to determine whether or not we did have a fuel leak.

After cranking up, there was no evidence of any leaking AVGAS, so I reboarded the S-2. As I was climbing in, the lineman was right behind me unplugging the APU, so I assumed he would close the entrance hatch and stow the ladder – common procedure at Homeplate.

We taxied out as No. 3 so we weren't in a position to be seen by a wingman, and our distance from the tower precluded their noticing whether our hatch was open. We took off and shortly thereafter felt a strong breeze. It didn't take a lot of detective work to figure out the source of all that fresh air. I attempted to close the hatch in flight, but wasn't successful.

We landed, ensured there was no damage, and then took off again for the ship. The ladder had blown off after takeoff and was recovered by the NAS ground crew. Fortunately, that time there was only embarrassment and no damage to the aircraft.

Homebasemouse

• Unfortunately, the old adage applies here: If you want something done right, or want to make sure something gets done, *do it yourself!*

Say It Isn't So!

NAS CONUS – As a longtime reader of APPROACH and MECH, I thought I'd heard it all. I've seen myself or friends in similar situations to those reported dozens of times. But here's one even *I've* never heard of before!

The crew chief of a four-engine bird was concerned about a gripe of "banging noises when the nosewheel steering is activated." He was qualified and designated to taxi the aircraft, so he embarked on his own style of troubleshooting.

I saw the aircraft taxiing along the line with just No. 2 and No. 3 turning. A lineman, with a headset on, was jogging alongside and slightly aft of the nosewheel – just in front of that big fan! Although not visible, the accomplice in this unique troubleshooting team was a metalbender *up in the nose wheelwell,* braced against the landing gear, listening for "banging noises."

Alerted to the situation by the shouts of spectators, the ASO took one look and hotfooted it to Maintenance Control to stop the operation. In response to the ASO's continued sputterings of disbelief at the absurdity of this dangerous incident, a chief in Maintenance Control said, "How else you gonna troubleshoot it?" The ASO, unable to compose himself, slipped quietly outside and commenced butting his head against a convenient bulkhead.

Later, a thorough inspection of the nose gear revealed a worn bushing. It was replaced and the banging noises ceased.

Thought you'd like to know.

No Name

P.S. If you use this in one of your magazines please don't use my name. I'm in a carpool with the skipper; the ASO is a relative by marriage; the ASO's wife is a cousin of one of the chiefs . . .

• How about it, you fixers out there. Got a story that can top this one? We'd like to hear about it.

HGU-4P Sunglasses

Dahlgren, VA – I want to reenforce the warning in *Weekly Summary 44-74* advising caution against shattering of aviator's sunglasses.

While driving in an urban area on a sunny day with my car window open, I was struck unexpectedly in the lower eyelid by an unknown object. No damage was done, but the sharp blow did make me flinch and suspect that something must have entered through the window and passed under the edge of my HGU-4P sunglasses.

When I took off the sunglasses to check my eye, I noticed a small chip, about one-eighth of an inch across, adjacent to the frame. In fact, the piece lay in my lap. There was a nearly imperceptible scratch or dent in the frame next to where the lens was chipped. My guess is that this small dent in the frame, made at some earlier date, caused stress in the glass lens that was relieved when the chip broke off and struck my eyelid without any apparent reason at the time.

If, as your *Weekly Summary* item suggests, my experience was not an isolated one, some change in the sunglasses might be in order, either to specify a safer grade of glass or to require a less sensitive contact between frame and lens.

CDR N. A. Ross, USN
Naval Space Surveillance System

• We can't tell from your letter whether or not your sunglasses had impact resistant lenses – depends on how long you've had them. But if the sunglasses did chip for no apparent reason other than possible defective/deficient manufacturing techniques, you should submit a Safety UR on them.

Needed: One Rescue Crew

NAS Stateside – Re the accident on 5 November which killed three men.

It took the Navy SAR helo over 30 minutes to get to the scene. At the time of the crash, the Coast Guard, which is co-located with us, had a helo *airborne* which was within 5 minutes of the scene of the crash. The pilot, however, was never informed. In fact, the Coast Guard had another helo with an alert crew standing by which could have been airborne within 5 minutes and on scene in another 5 minutes.

Not only was the Coast Guard not alerted when the crash occurred, but when they did find out (from one of their fixed-wing planes on a training flight), they called Navy ops and offered one or both helos. Operations relayed that the helo wasn't needed! This took place around 1500 and the Navy SAR helo wasn't on scene until after 1515!

Perhaps in this case, the helo didn't determine life or death for the crew, but it has plenty of times in the past. If I ever go down, I would like to think that *all* possible efforts are made to get a rescue vehicle to me. Apparently, this was not done in this case.

ADC I. M. Concerned

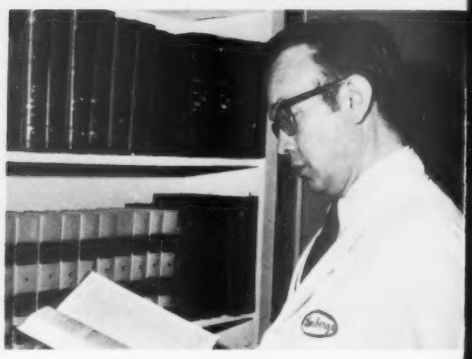
• SAR is SAR and it should make no difference who the pilot is. Whoever can get to the scene first should be No. 1. We hope, in the future, that SAR control will not differentiate between agencies.

Vol. 20 No. 11

NAVAIR 00-75-510

approach

IFC



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CREDITS/The soaring F-14 *Tomcat* on this month's cover is by Craig Kavafes, courtesy Grumman Aircraft Corp., Bethpage, L.I., N.Y. **IFC & Pg. 3** Photos: courtesy the author. **Pg. 22-23** Photos: courtesy Cubic Corp., San Diego, CA. **OBC** Photos: PH3 Jim Preston.

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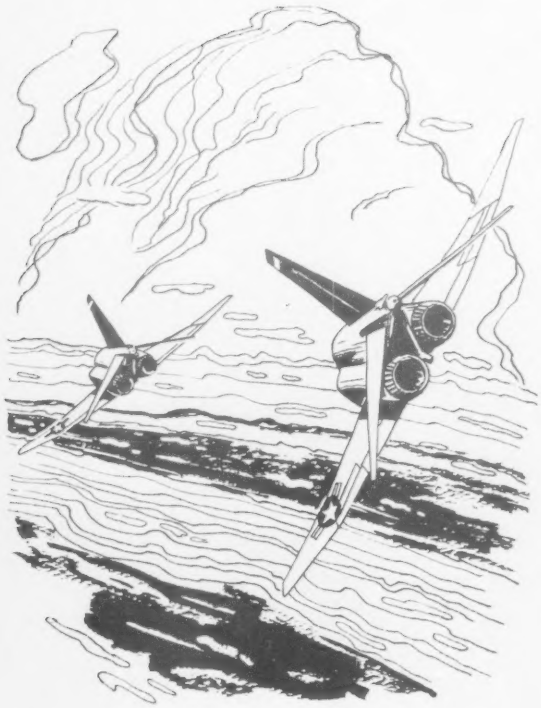
A DAY "SPOILER"



AN F-4N *Phantom* was returning to a CVA following a short ACM mission. Leading a flight of two into a VFR break at 800 feet and 350 knots, the pilot initiated a left break by momentarily applying near full left stick, followed by neutral stick. The controls bound and the aircraft continued to roll beyond 90 degrees angle-of-bank with the nose dropping.

The pilot later stated, "By forcing the stick full right with both hands, I was able to roll back to less than 80 degrees angle-of-bank and get the nose up, but the aircraft started to buffet and slow roll left again. Maintaining full right stick, I selected afterburner. The bird started to climb, accelerate, and eased back to the right to between 30-45 degrees left wing down. Passing approximately 350 knots, the aircraft started to roll left again even though full right stick was still being applied. I deselected burner and it started to roll back to the right. The aircraft would maintain approximately 30 degrees left wing down with full right stick, right trim, and right rudder. Passing 3000-4000 feet the controls broke loose with a noticeable feel."

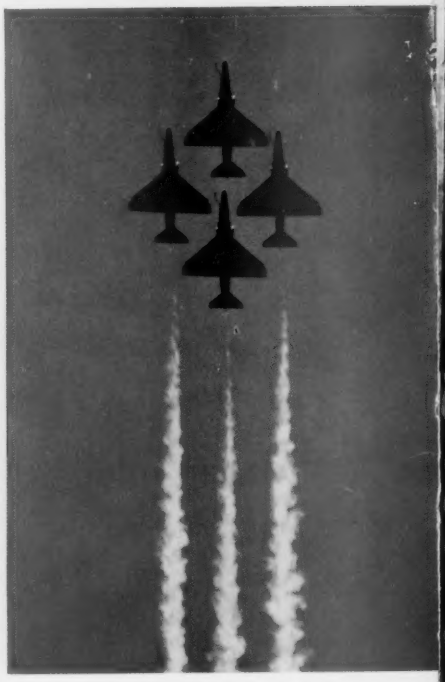
The *Phantom* was retrimmed and slow-flighted, with no further control difficulties. A straight-in approach to an arrested landing was made aboard the CVA, never exceeding 10 degrees angle-of-bank.

Subsequent investigation revealed that a flashlight had been left adrift in the fuselage. It was suspected that the flashlight had momentarily wedged itself just aft of a bellcrank and below a push-pull rod where the rod goes through the aircraft bulkhead, causing a control bind. The FOD was removed and the aircraft flown 5 days later. *The next pilot experienced identical control difficulties under the same conditions!*

A second, extremely thorough investigation disclosed the attach fitting of the port inboard spoiler actuator had both ears broken. This allowed the actuator assembly to drop and bind input links. A part description can be found on pg. 1-25, Fig. 1-08, Item 36 of NA01-245FDN-4-1. It is suspected that the bracket failed due to metal fatigue. A technical assist and engineering analysis were requested.

Three squadron aircraft with similar time and landings were checked for similar discrepancies but none were found. It is suspected that this was an isolated incident, but nevertheless, strict compliance with inspection procedures for this area during Phase B is recommended. ◄

WANTED
Blue Angels



IN November 1974, the Navy Flight Demonstration Squadron completed their first season in the A-4E *Skyhawk* with a homecoming airshow at NAS Pensacola. The '74 season saw the Blue Angels flying a total of 52 airshows, performing before 2,177,000 spectators.

This year, the team is planning 72 airshows which began in late March and ends in November. At that time the Blue Angels will require two replacement pilots and a new leader. The preferred method for applying for one of the wingman positions is by letter to the commanding officer with a copy to the Chief of Naval Personnel and Chief of Naval Air Training. Background desired for the demonstration pilot is:

a. Minimum of 1500 flight hours by November 1975.

b. On or approaching rotation to shore duty following a tour with a carrier-based jet squadron.

c. Regular Navy and career motivation.

d. Highly motivated to represent the Navy before the public.

Applicants for the leader's billet should request assignment by letter to the Chief of Naval Air Training with a copy to the Chief of Naval Personnel (Pers 433) and Commanding Officer, Navy Flight Demonstration Squadron. The prospective leader must be a command-screened CDR or LCDR with a minimum of 3500 flight hours and must meet necessary height-weight requirements. It is highly desirable that he has already completed a tour in a command billet.

Questions regarding application or comments concerning the mission of the Blues should be addressed to Commanding Officer, Navy Flight Demonstration Squadron, NAS Pensacola, FL 32508, or phone Autovon 922-2583. "This is our way of projecting Naval Aviation and we want to do it in the most professional manner possible."